# The Next Generation:

Why Coding for Youngsters Is Important

- **Oracle Database 18c:**
  What to Expect On-Premises and in the Cloud

- **Digital Health:**
  Where Will It Lead Us?

- **Leetspeak:**
  Can You Decipher It?

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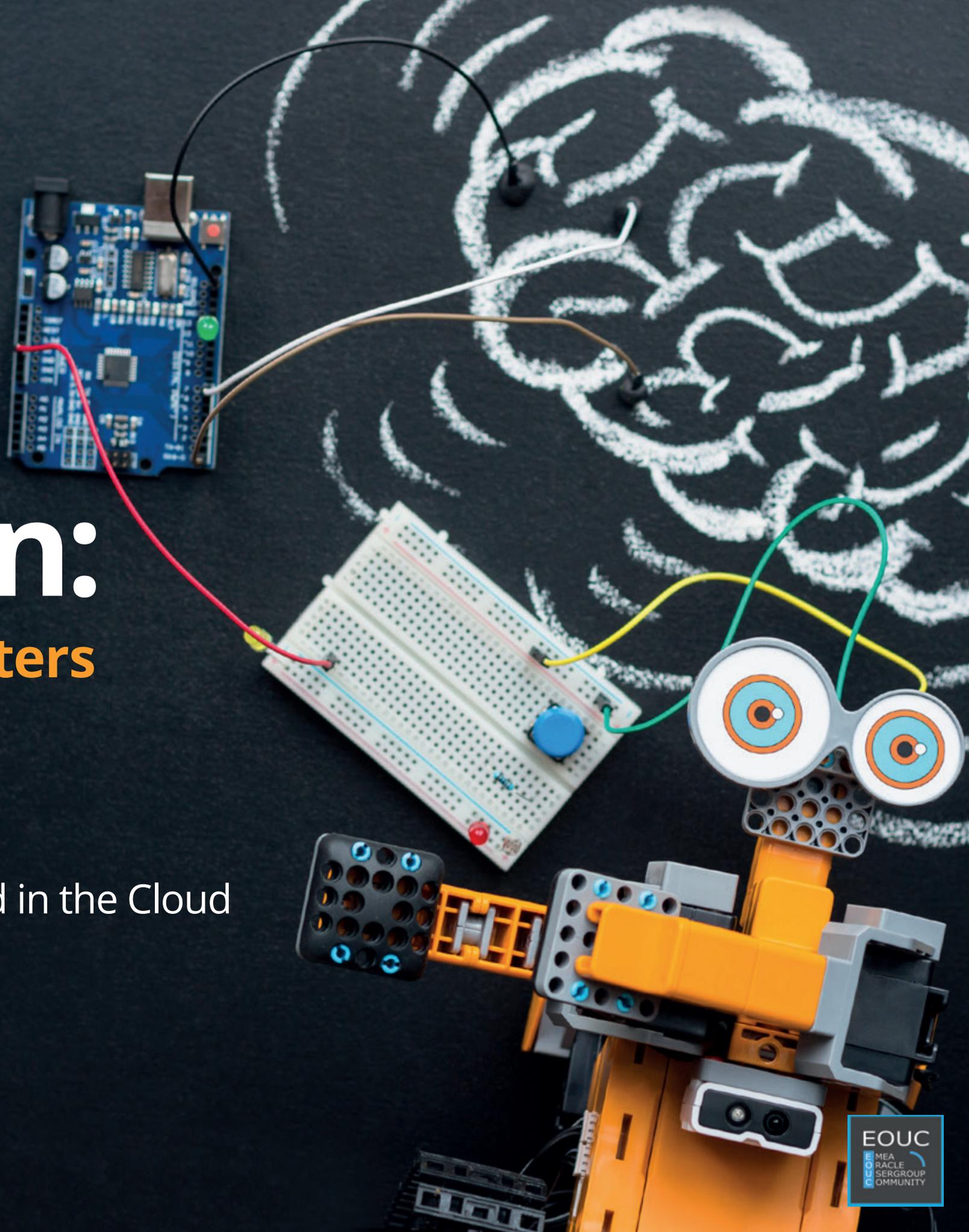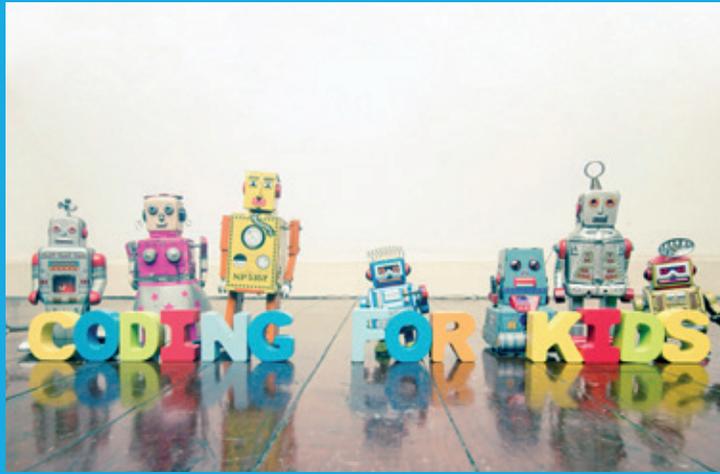
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Have a comment? Suggestion? Want to submit an article proposal? **Here's how to do it.**

Editorial

Dear Oracle User Group Members,

Welcome to the 11th issue of ORAWORLD! Good news for all our readers: We are beyond excited to let you know that you can now expect our e-magazine every two months! That way, we aim at providing you with quicker background information on new technological developments and even more fun stories from the Oracle cosmos!

This time, you are in for an interesting read on the importance of IT experiences for the next generation. If you ever wondered why it is important for kids to learn how to code, you should check out the article "Coding for Kids" on **page 10.** For instance, find out how the Estonian government is educating the young generation in coding and learn why coding can be seen as the "literacy of the century".

With Rebekka Alvsvåg from Bergen on the west coast of Norway, get to know a young and aspiring IT student who spent nine weeks as an intern at the CERN openlab in Switzerland. In the interview on **page 21**, she fills you in on her greatest learnings and provides ideas on how to motivate young girls to become interested in technology.

On another note, Oracle 18c was released on Oracle Cloud and Engineered Systems in February. With the on-premises version now available, we asked the Oracle Master Product Manager Maria Colgan what to expect from 18c and how the on-premises version differs from the Cloud version. In this issue, read the first part of her article on **page 26** for an introduction on the most powerful improvements. If you

Dietmar Neugebauer
Former Executive Chairman of DOAG (Germany)

are looking for useful SQL functions for developers that you might not yet know about, you should check out Venkata Ravi Kumar Yenugula and Mari Kupatadze's article about analytical functions on **page 14** to get some useful tips and tricks to retrieve huge amounts of data using less resources.

These are just some examples of the great articles in ORAWORLD issue 11. I hope you enjoy reading this edition. If you are interested to submit your own article, please go to our website **www.ORAWORLD.org**.

Yours
Dietmar Neugebauer

Editorial

An Unexplained Phenomenon

www.commitstrip.com

13375P34K (Leetspeak)

Lisa Damerow

No, we did not smash our face into the keyboard writing this title, we actually meant to type that! If you are a regular on the Internet, you have probably come across the phenomenon "leetspeak". Curious how it works? Then read on to learn more.

Leet(speak), also called eleet, l33t or 1337 is an alternative alphabet. The most common version features various combinations of numbers or symbols used to replace Latin letters. But leetspeak also includes the intentional misspelling of words. Originally, leetspeak was used to bypass spam filters and send encrypted e-mails so that they could not be read and filtered automatically by computers. Another of its origins was a user's "elite" status on Bulletin Board Systems (BBS) in the 1980s, which granted them special access permissions. It is used on the Internet on forums, chat rooms or online games.

There are different levels of Leet. We will show you the differences on the sentence „**I love ORAWORLD Magazine**":

Level 1:

1 l0v3 0r4w0rld m464z1n3

The Basic Leet replaces every vowel with a number, which makes a word look odd but it is still pretty easy to read once you get used to it.

Level 2:

! |_0\\/3 0|24\\/\\/0|2|_|) /\\/\\4942!|\\|3

If you had trouble reading the level 1 sentence, you are in for a headache with the Intermediate Leet. In this level of leet, in addition to the basic leet variations, consonants are substituted with numbers, a series of punctuation marks or symbols, which makes it a lot more confusing to the eye.

Level 3:

! 10\\/3 0|24\\|/0|21|) |\\/|4647_!|\\|3

We are not making this up, there is indeed a way to butcher words even worse than in the example above – with the Ultimate Leet. It is a combination of Basic and Intermediate Leet but replaces vowels with symbols or punctuation marks as well.

But how come we can read words consisting of numbers?

Spanish cognitive scientist Jon Andoni Duñabeitia and his team researched the phenomenon and wrote **a 38 page article** on the results. They found out that, while reading words that consist of numbers, the section of the brain associated with numbers is hardly even activated. "For your brain, it's not a number in a word, it's a wrongly written or strangely written letter" Duñabeitia said in an interview, "You are in this mode of tolerance that allows for small distortions in the identity of the letters". While nearly everybody is able to read these with ease, it is true, however, that young people who have grown up using computers may find it easier than older people that haven't had access to modern technology early.

Do you think you are pr0 or n00b at this? Can you decipher this text?

c4u710n, l337 4h34d. bu7 7h15 15 571ll w4y 700 345y, 1f y0u 45k u5. |-|0\\/\\/ 4|30(_)7 7|-|!5? `/0(_) |D|20|34|3|_`/ |-|4\\/3 70 57|24!|\\| 4 |_!77|_3 /\\/\\0|23 70 |)3(!|D|-|3|2 7|-|!5. !|# `/0|_| (0|_|1|) |234|) 3\\/3|2`/+|-!!|\\\6 |_||> +0 +|-|!5 |>0!|\\|+: (0|\\|6|24+|_|14+!0|\\|5. 8|_|+ \\\|/3 4|23 \\/3|2`/ (0|\\|(3|2|\\|3|) 4+ +|-|3 54|\\/|3 +!|\\/|3.

You can find the translation below.

> **Leet what?**
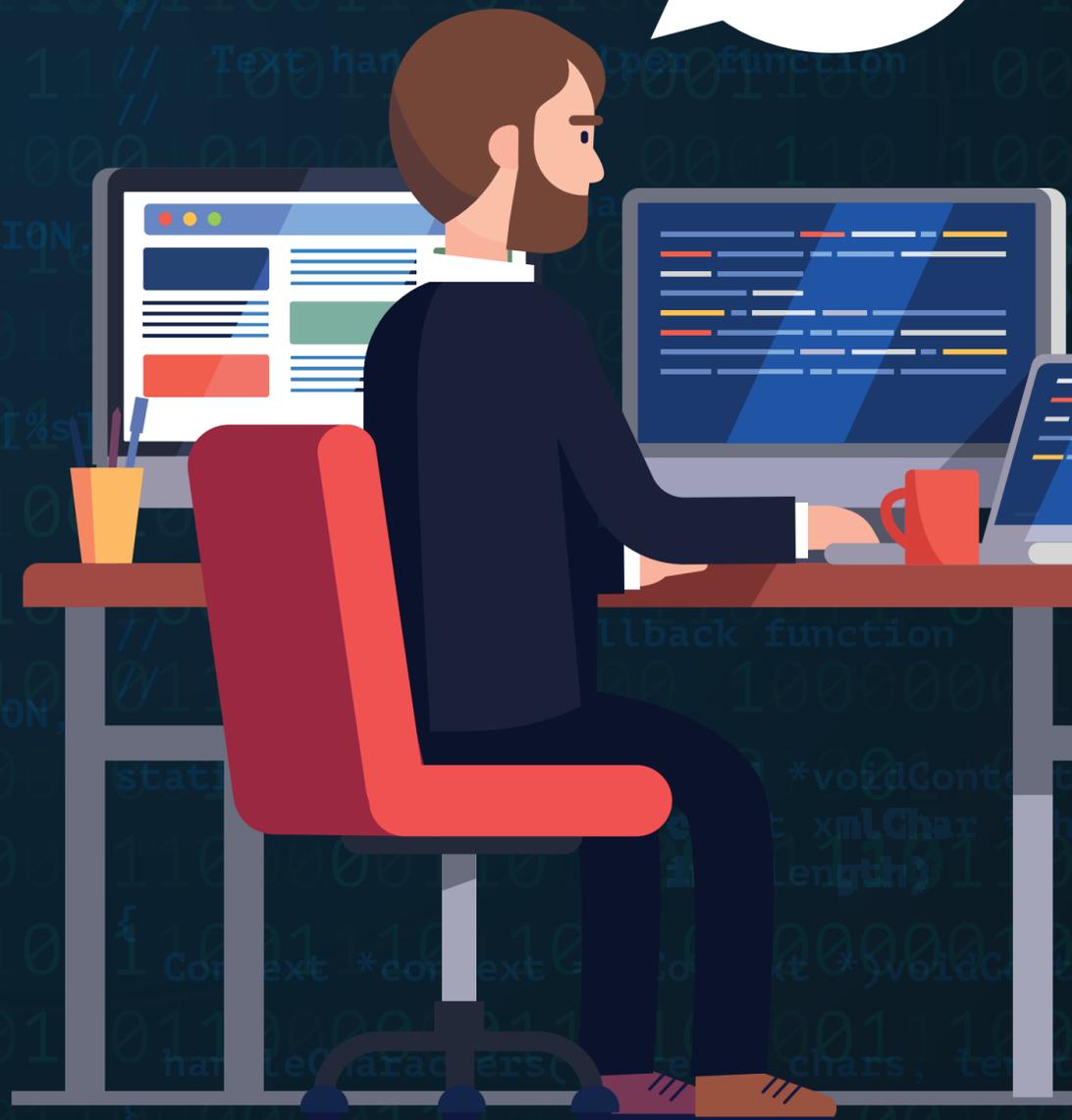
Marina Fischer

Welcome to the Future of Health

Digitalization does not stop at the doorstep of the healthcare industry. We all know health apps and fitness trackers that record and evaluate our body data, and many of us are already using at least one of these apps. This trend has become very popular all around the globe, so by now, digital services such as online appointments with doctors or digital reminders for examinations are becoming more and more common. The benefits are numerous: Digital healthcare is supposed to enable faster and better communication, no matter where you are, and thus increase efficiency and reduce costs. What will the future look like?

Digital Health

40% of all apps focus on health condition management or patient care[1]

200 new apps are added to the mobile health market every day[3]

325,000 mobile health apps were available in 2017[4]

68% of the mobile health app publishing market is aimed at helping the management of diabetes[2]

80% of Internet users have searched for a health-related topic online[5]

Estimated global mobile health market in 2019:
37 billion USD[6]

What Can Digital Health Do?

- Chronic disease management
- Remote patient monitoring
- Communication between patient and doctor
- Personal health management

- Instructions for taking medication
- Geography and time barriers no longer exist
- Continuous instead of periodical monitoring
- Shift from hospital-centric to patient-centric approach

Top Trends in Digital Medical Innovation

Sensors / Wearables
As medical applications, the aim of wearables is to detect life-threatening conditions and help with patient diagnoses. In the future, digital bandages, breast cancer-detecting bras or wearable ECG devices could be the norm.

AI and Big Data
Automated image analysis and diagnosis in radiology or identifying patient risk by analyzing vast amounts of historic patient data are only two ways of how AI and Big Data might support doctors in a few years.

Robotics
Already today, surgeons are using automated robots as a helping hand. However, in the future, surgical robots might perform complete surgeries without human intervention.

Nanotechnology
The science of extremely small materials holds enormous potential: Just imagine what it would be like if doctors would be able to target cancer cells directly with the help of nanostructures.

Data Security
The number of cybersecurity breaches will only increase in the future, so hospitals and health providers must prepare to reduce risk and increase the patients' and doctors' trust in digital services.

Connected Devices
One day, a patient's vital data might be streamed in real-time to his or her doctor, who then can step in whenever it is necessary to provide support or treatment.

[1] https://www.digitalcommerce360.com/2018/01/12/health-apps-cut-u-s-healthcare-costs-7-billion-annually/
[2] https://www.digitalhealth.net/2018/01/mobile-health-and-apps-news-in-brief-5/
[3] https://www.digitalhealth.net/2018/01/mobile-health-and-apps-news-in-brief-5/
[4] https://research2guidance.com/325000-mobile-health-apps-available-in-2017/
[5] http://www.nbcnews.com/id/3077086/t/more-people-search-health-online/#.W3LSmrgyVaQ
[6] https://www.statista.com/topics/2263/mhealth/

The Sweets-Loving, Green Robot Without a Name

Lisa Damerow

The green Android™ robot and arguably the biggest competitor of Apple was created in 2007 by Google graphic designer Irina Blok. Surprisingly, this famous logo was not part of a project for the software. Blok created it independently and made it open-source. However, it quickly became very popular among the developers at Google, so the company finally adopted it as its official icon for the software when it was launched in 2008. On her **blog**, Blok wrote: „Initially the logo was meant for developer community, but it quickly became consumer facing with millions of people creating their own versions of the logo every day.“ Although the robot itself does not have an official name, the Android team at Google reportedly call it "Bugdroid".

In case you were also wondering why Android versions are named after dessert, we will not leave that unanswered either. Android developer Andy Rubin is a huge fan of sweets – and who could blame him? So he decided to name all versions accordingly. Each version appears in alphabetical order and has a dessert item with the corresponding letter. For example, version 1.1 is called "Angel Cake", version 2.0 - 2.1 "Eclair" and so on. Version 8.0 - 8.1 "Oreo" was released on August 21, 2017, while the latest version, "Android Pie", was released on August 6, 2018.

https://en.wikipedia.org/wiki/Android_(operating_system)
https://www.quora.com/Why-are-Android-versions-always-named-after-sweet-items

http://1000logos.net/android-logo/
http://www.businessinsider.com/where-the-green-android-robot-came-from-2015-5?IR=T

Techs & Nerds

Coding for Kids – Why Is It Important?

Sanela Lukavica

Coding does not only provide us with the means for a successful career, it also holds the key to sharpen our logical thinking abilities and orient ourselves in this world. The concept of coding as "a literacy of the century", as brought up by Marina Umaschi Bers[1], holds a tremendous social topicality.

[1] http://blogs.edweek.org/edweek/education_futures/2018/01/coding_as_a_literacy_for_the_21st_century.html

If in specific surroundings, such as a digital society, you are not able to read the codes (no pun intended) that essentially constitute your society, you will ultimately be unable to develop an in-depth comprehension of your own world. Learning to code thus cannot be the privilege of a few STEM-students, but should be included in the curricula of all school children from an early age on.

This may seem like a rather extensive endeavor, but a closer look at Estonia exemplifies that it is feasible. There is a variety of different angles from which to approach coding, some of which do not entail the highly complex processes we usually associate with learning to code at all. The right didactic methods will help children to quickly acquire the new skills.

Although the need to secure future workforces is not the only reason programming should become a decisive item on political agendas in Europe and worldwide, learning to code makes much sense from a pragmatic standpoint as well: For example, in 2017 alone, 55,000 job vacancies could not be filled in the German IT sector.[2] Demographics speak a clear language and the effects of age structure are already heavily showing in Europe. More and more older employees will be retiring in the next five years, leaving too many vacancies where there are not enough qualified recruits to fill the gap.

Digitalization In Schools: Of Reluctant Students And Prodigies

As the cost of digital abstinence would be too high, digitalization in schools has been increasingly discussed in countries all over the world for years. This makes it even more surprising that the quality of its execution still differs widely, even between countries that can otherwise be compared in relation to their economic standards. In some countries, the idea of digitalization and coding has been approached rather hesitantly. There, school children are still merely being taught fragments of computer operations that require no complex transfer of learning, such as the most basic functions of a spreadsheet program. Other countries have embraced the process wholeheartedly, and have introduced coding to their curricula, such as Estonia in 2012 and Great Britain in 2014.

Estonia has certainly been at the forefront in the process, taking it to new heights.[3] The country's self-designation as a "digital society"[4] couldn't be more accurate. It was as early as 1996, thus shortly after the Internet was first introduced to a wider public, that the Estonian government set up the project "Tiigrihüpe" ("Tiger's leap"), which made the Internet available in all schools. In a country of small proportions, where pretty much every request to the authorities can be made online today, children are being introduced to coding platforms such as Scratch and Code Gameware[5] at an early age – and experience shows that they embrace them as a part of their curriculum.

[2] https://www.bitkom.org/Presse/Presseinformation/55000-Jobs-fuer-IT-Spezialisten-sind-unbesetzt.html

[3] https://www.doag.org/en/home/news/e-estonia-the-little-country-that-could/detail/

[4] https://e-estonia.com/

[5] https://www.aaas.org/blog/aaas-serves/progetiiger-initiative

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At JavaLand4Kids in Germany, children playfully discover the beauty of coding

Strikingly, the creation of better job opportunities is not the only drive for Estonians to follow this holistic digitalization course. The aim to create a more equal society in which children will become "digital citizens" and have the same chances no matter their social background, is one of the leading factors in these efforts.[6][7] The fact that the PISA test results of Estonian students continuously belong to the best in the world and show only the smallest correlation between the success in school and the social background of a student, certainly strengthens the impression that a 'digitalized classroom' might be a good idea.

Learning To Code From Scratch

With the visual, MIT-designed programming language Scratch, children between the age of eight and 16 years learn to code without having to deal with too complex operations, which can

[6] **https://www.youtube.com/watch?v=GH1fyqbSQ9I**
[7] **http://www.strategie.gouv.fr/english-articles/education-estonia-bolstering-excellence-digital-technology**

Techs & Nerds

stifle their interest in the first place. The use of Scratch is free of charge, thus even children who would like to code but do not get the opportunity at school, can devote themselves to their new hobby.

Scratch is not meant to transform children into coding experts in a wink – they move blocks across the screen and don't have to enter successions of complex command lines. But it refines their intuition and enhances their understanding of what constitutes a computer program. An essential part of Scratch is the possibility of pulling their project out of the imaginary drawer and sharing it on the website, thus introducing a kind of reward system and offering the children affirmation. At the time of writing, 37,697,926 projects have been shared, and counting.[8] Playful motifs and characters help pique the interest of the young as well as their wish to finalize their very own project. The makers of Scratch characterize learning to code as a means to an end. By coding, children "learn important strategies for solving problems, designing projects, and communicating ideas."[9] The message is clear: Coding is no exclusive craft for future software engineers and other IT professionals. It is for everyone.

Scratch is also one of the important platforms that is used both in schools that teach coding and at several conferences which are exclusively aimed at children. One of those is Devoxx4Kids, a conference for the youngest corresponding to Devoxx.

When Coding Makes The World Go Round: Devoxx4Kids

Devoxx4Kids[10], a project that was founded in 2013 in Belgium, takes the idea of teaching children to code one step further:

Here, children and teenagers are being introduced to the three thematic blocks object-oriented programming, robotics and engineering. Young attendees from 24 countries learn how software programming translates into visible results, and what items can actually be programmed. The initiative is thus reminiscent of Umaschi Bers' 'school of thought' and encapsulates the action of coding with an effort to infuse the children with a more general understanding of what they are actually capable of achieving while coding. By programming the robots Lego Mindstorm and NAO Humanoid Robot, the children usually become even more immersed in the process than if they were 'merely' software programming. Apart from robots, the children can create their own computer games as well and use the Arduino platform to find out what parts of electronics can make them interact with the Scratch characters they have only just created.

Thus, it is the passion and creativity of the kids that the organizers of the conference are aiming at. The manifesto of Devoxx4Kids states the wish to inspire "not only the children, but also the classical education system", and thus achieve a much higher rate of countries that include coding or computer science in general in the curricula of their schools.[11] Their platform does seem to provide a very good starting point, and can serve as an inspiration for similar conferences and projects all around the world.

[8] https://scratch.mit.edu/
[9] https://scratch.mit.edu/about/
[10] http://www.devoxx4kids.org/
[11] http://www.devoxx4kids.org/manifesto/
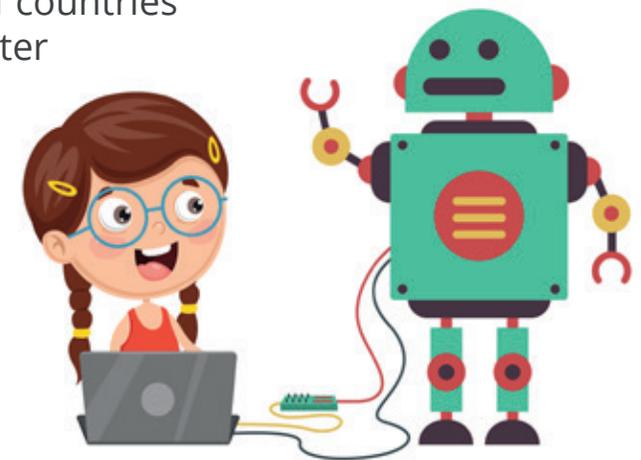
Oracle Analytical Functions: Tips and Tricks

Venkata Ravi Kumar Yenugula and Mari Kupatadze

Processing huge amounts of data quickly using less resources is considered as a past, present and future challenge. Retrieving data from Oracle Database requires special knowledge. Read on for useful tips and tricks on how to face daily challenges in data retrieval in this article by Venkata Ravi Kumar Yenugula and Mari Kupatadze.

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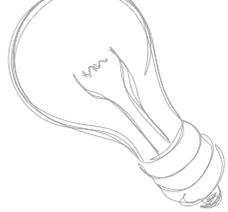
The same data can be retrieved in several ways and the best method is chosen based on the following characteristics:

- Optimal usage of resources
- Fast response time
- Code simplicity

Analytical functions give us the opportunity to write a short code, use resources optimally and get the response quickly.

Plan Comparison

If we compare execution plans between Analytic and non-Analytic SQL statements, we see its advantage. For example, the following query reports the salary for each employee, along with the average salary of the employees within the department:

- **Select with Analytic Function:**

```
SQL> SELECT employee_id ,department_id ,salary,AVG(salary)
OVER (PARTITION BY department_id) AS avg_dept_sal
FROM hr.employees;
```

Description	Object ...	Object name	Cost	Cardinality	Bytes
⊟ SELECT STATEMENT, GOAL = ALL_ROWS			4	107	1177
⊟ WINDOW SORT			4	107	1177
TABLE ACCESS FULL	HR	EMPLOYEES	3	107	1177

- **The same SQL statement without Analytic Function:**

```
SQL> SELECT employee_
          ,department_id
          ,salary
          ,avg_salary
   FROM   hr.employees
   JOIN   (SELECT department_
                  ,AVG(salary) AS avg_salary
           FROM   hr.employees
           GROUP BY department_id)
   USING (department_id);
```

Description	Object ...	Object name	Cost	Cardinality	Bytes
⊟ SELECT STATEMENT, GOAL = ALL_ROWS			8	339	12543
⊟ HASH JOIN			8	339	12543
⊟ VIEW	SYS		4	11	286
⊟ HASH GROUP BY			4	11	77
TABLE ACCESS FULL	HR	EMPLOYEES	3	107	749
TABLE ACCESS FULL	HR	EMPLOYEES	3	107	1177

As you can see, the second code is longer and not easily understandable. Moreover, the plan of the first query shows that retrieving the same set of data requires less resources to be used than in the second query.

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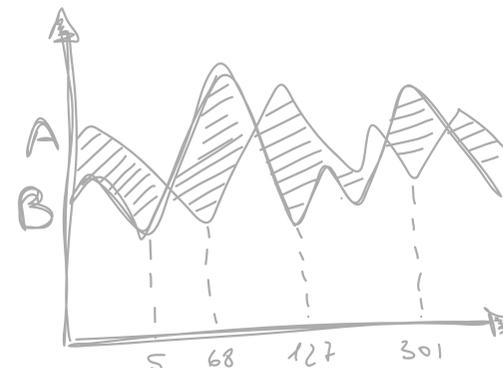
Functionality and Syntax

To easily understand Analytic Functions let's look at aggregate functions. An aggregate function, as the name suggests, aggregates data from several rows into a single result row. For example, we might use the AVG aggregate function to give us an average of all the employee salaries for each department:

```
SQL> SELECT department_id
            ,AVG(salary)
     FROM   hr.employees
     GROUP BY department_id
     ORDER BY department_id;
DEPARTMENT_ID AVG(SALARY)
----------    ----------
10            4400
20            9500
```

The aggregate function reduces the number of rows returned by the query.

Analytic Functions also work on subsets of rows, like aggregate functions, but they do not reduce the number of rows returned by the query.

Syntax:

```
analytic_function([arguments]) OVER(analytic_clause)
```

The **analytic_clause** breaks down into the following optional elements:

```
[query_partition_clause][order_by_clause [windowing_clause]]
```

Query Partition Clause

The query_partition_clause divides the result set into partitions or groups of data. For example, the following query reports the salary for each employee, along with the average salary of the employees within the department.

```
SQL>SELECT employee_id
           ,department_id
           ,salary
      ,AVG(salary) OVER (PARTITION BY department_id) avg_dept_sal
     FROM   hr.employees;
EMPLOYEE_ID DEPARTMENT_ID SALARY      AVG_DEPT_SAL
----------  ---------     ----------  ------------
200         10            4400.00     4400
201         20            13000.00    9500
```

Windowing Clause

We have seen previously that the query_partition_clause controls the window, or group of rows, the analytic operates on. The windowing_clause is an extension of the order_by_clause and as such, it can only be used if an order_by_clause is present. The windowing_clause has two basic forms.

```
RANGE BETWEEN start_point AND end_point

ROWS BETWEEN start_point AND end_point
```

Possible values for "start_point" and "end_point" are:

• UNBOUNDED PRECEDING
• UNBOUNDED FOLLOWING
• CURRENT ROW
• value_expr PRECEDING
• value_expr FOLLOWING

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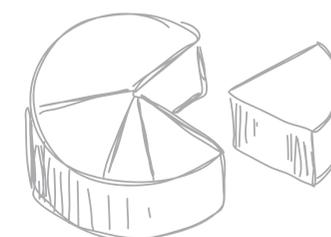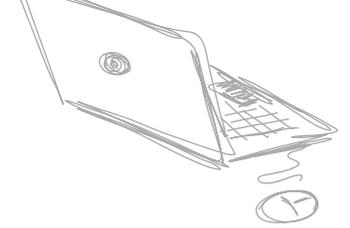
Example:

```
SQL> SELECT employee_id
            ,department_id
            ,salary
       ,FIRST_VALUE(salary) OVER (ORDER BY salary ROWS BETWEEN 1 PRECEDING AND CURRENT ROW) AS previous_sal
       ,LAST_VALUE(salary) OVER (ORDER BY salary ROWS BETWEEN CURRENT ROW AND 1 FOLLOWING) AS next_sal
FROM   hr.employees;
EMPLOYEE_ID DEPARTMENT_ID SALARY    PREVIOUS_SAL NEXT_SAL
----------- ------------- --------- ------------ ----------
32          50            2100.00   2100    2200
128         50            2200.00   2100    2200
36          50            2200.00   2200    2400
```

LAG & LEAD
Other important Analytic Functions are LAG and LEAD. These functions are used to retrieve previous and preceding values without self-joining tables.

For example:

```
SQL> SELECT hire_date
            ,last_name
            ,salary
            ,LAG(salary, 1, 0) OVER (ORDER BY hire_date) AS prev_sal
     FROM hr.employees
     WHERE job_id = 'PU_CLERK'
     ORDER BY hire_date;
HIRE_DATE LAST_NAME                        SALARY    PREV_SAL
--------- ------------------------ ---------- ----------
18-MAY-03 Khoo                              3100         0
24-JUL-05 Tobias                            2800      3100
24-DEC-05 Baida                             2900      2800


SQL> SELECT hire_date
            ,last_name
         ,LEAD(hire_date, 1) OVER (ORDER BY hire_date) AS "Next Hired"
     FROM hr.employees
     WHERE department_id = 30
     ORDER BY hire_date;
HIRE_DATE LAST_NAME                Next Hired
--------- ------------------------ ----------
07-DEC-02 Raphaely                 18-MAY-03
18-MAY-03 Khoo                     24-JUL-05
24-JUL-05 Tobias                   24-DEC-05
```

Techs & Nerds

STDDEV
You may have already heard about the function STDDEV. The Standard Deviation is a measure of how spread out numbers are. In statistics, it is represented by the Greek letter sigma σ or the Latin letter s.

Real World Example:

The Standard Deviation will help you know your height is low, high or medium based on the data that was collected in your country or in the world.

If your height satisfies the following condition you have a normal height, otherwise you are tall or small:

v_Mean – v_Standard_Deviation < = You_height < = v_Mean + v_Standard_Deviation

The following picture shows which heights are within one Standard Deviation of the Mean:
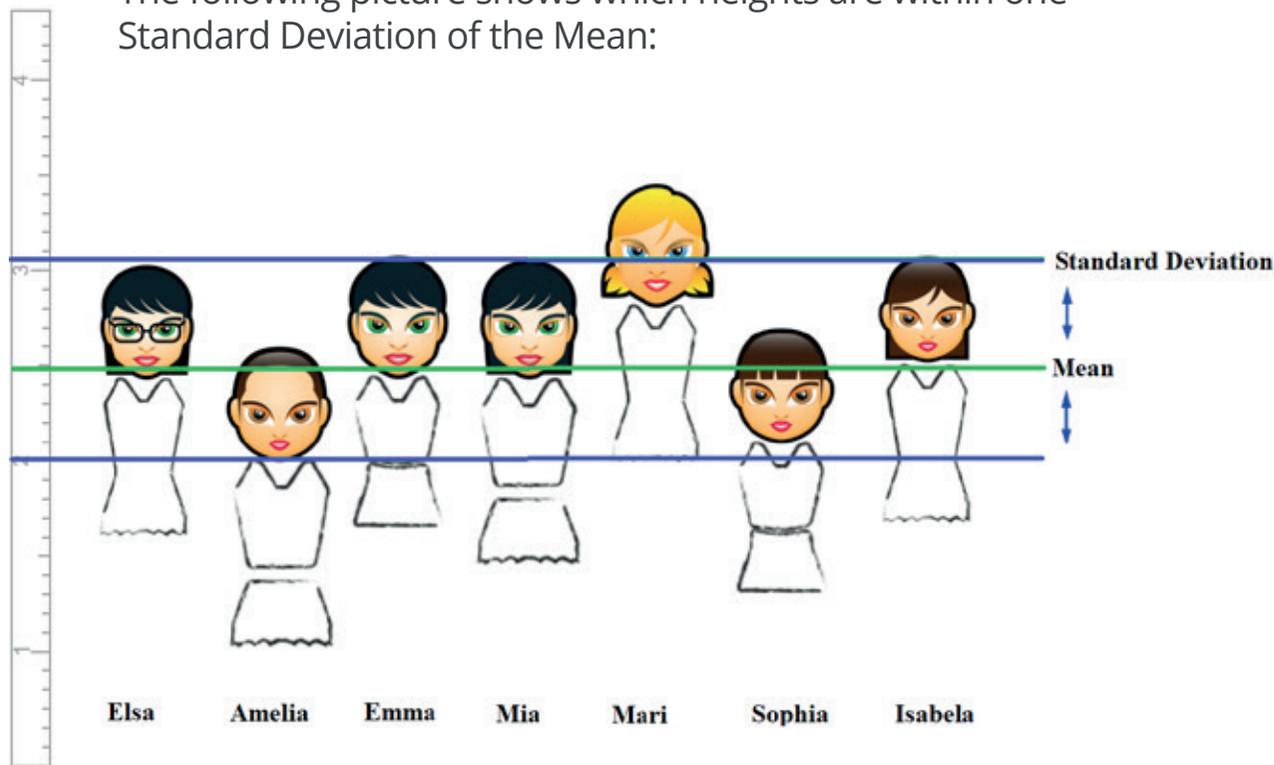
The formula is easy: it is the square root of the Variance.

So what is the **Variance**?

The Variance is an Analytic Function and is the average of the squared differences from the Mean. It becomes more complicated when you need to calculate STDDEV based on a large amount of data. In the past, when there was no Oracle, or other software that has these built-in functions, it would be necessary to manually calculate the Standard Deviation. In that case, first you need to find a Variance.

To calculate Variance:

• Need to find Mean.
• For each number, subtract the Mean and square the result.
• Work out the average of those squared differences.

When you get the value for Variance, take the square root of it and you get Standard Deviation. Instead of calculating all these values separately, use the Oracle function STDDEV, it is easy:

```
SQL> SELECT STDDEV(height) "Deviation in cm" FROM hr.persons;
Deviation in cm
---------------
10
```

Techs & Nerds
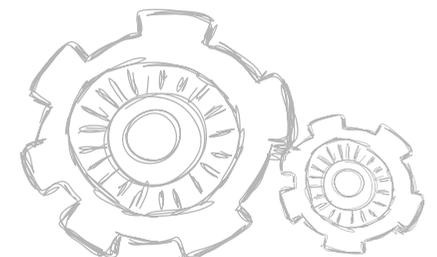
There are many other Analytic functions available in Oracle, the whole list is:

- **AVG**
- **CLUSTER_DETAILS**
- **CLUSTER_DISTANCE**
- **CLUSTER_ID**
- **CLUSTER_PROBABILITY**
- **CLUSTER_SET**
- **CORR**
- **COUNT**
- **COVAR_POP**
- **COVAR_SAMP**
- **CUME_DIST**
- **DENSE_RANK**
- **FEATURE_DETAILS**
- **FEATURE_ID**
- **FEATURE_SET**
- **FEATURE_VALUE**
- **FIRST**
- **FIRST_VALUE**
- **LAG**
- **LAST**
- **LAST_VALUE**
- **LEAD**
- **LISTAGG**
- **MAX**
- **MIN**
- **NTH_VALUE**
- **NTILE**
- **PERCENT_RANK**
- **PERCENTILE_CONT**
- **PERCENTILE_DISC**
- **PREDICTION**
- **PREDICTION_COST**
- **PREDICTION_DETAILS**

Mari Kupatadze
Oracle Certified Master,
Senior Solutions Architect at
FlashGrid Inc

Venkata Ravi Kumar Yenugula
Oracle ACE Director & Oracle
Certified Master, DBA-Lead at
Infolob Solutions Inc

- **PREDICTION_PROBABILITY**
- **PREDICTION_SET**
- **RANK**
- **RATIO_TO_REPORT**
- **REGR_ (Linear Regression) Functions**
- **ROW_NUMBER**
- **STDDEV**
- **STDDEV_POP**
- **STDDEV_SAMP**
- **SUM**
- **VAR_POP**
- **VAR_SAMP**
- **VARIANCE**

To sum it up, Analytical Function is a nice Oracle feature that should be used whenever possible to avoid any high wait events on your database and slow performance during peak hours.

Techs & Nerds

Number of the Month:

Marina Fischer

51 %

Java

When asked which programming languages they use regularly, 51 percent of 6,000 developers answered "Java". Thus, according to a study by JetBrains on "The State of the Developer Ecosystem 2018", Java is still the most popular primary programming language. On the other hand, the most used overall programming language is JavaScript with 64 percent. "Go" was voted the most promising programming language.

In addition, the study also comes to the conclusion that – compared to last year's results – programmers are turning away from self-hosted solutions on-site and are using the cloud more often. A trend that will only increase over the next twelve months, according to the study.

Fun questions were also part of the survey. That way, Jet Brains found out that 77 percent of respondents listen to music when coding. And while DBAs, UX/UI designers and Architects mostly prefer Rock, CIOs, CTOs, CEOs, Technical Support and Business Analysts prefer classical music. Finally, one answer that will most definitely not surprise Java developers is that 57 percent of the respondents prefer coffee over tea (with 33 percent).

JetBrains, a Czech manufacturer of development environments and development tools, conducted the survey at the beginning of 2018. The company became known through the Java IDE IntelliJ IDEA.

For all results of the survey, visit https://www.jetbrains.com/research/devecosystem-2018/

Techs & Nerds

Marina Fischer

A Dream Come True: Experiences from a Summer Intern at CERN openlab

Last summer, Rebekka Alvsvåg from Bergen on the west coast of Norway spent nine weeks in Switzerland as a CERN openlab Summer Student. There, she worked in the Database Services Group of CERN's Information Technology Department (IT-DB). The 23-year-old web developer is studying Informatics at the Norwegian University of Science and Technology (NTNU) in Trondheim and loves to spend her time hiking, playing basketball and taking concert photos. Read on to find out more about her greatest learnings at CERN and her thoughts on women in technology.

How did you end up as an intern at CERN?

Many people wonder why an Informatics student would be so interested in working at CERN since it is mainly for physics students. For me, it is not difficult to understand why anyone would want to work at CERN when you look at the pictures of the LHC (Large Hadron Collider) and the experiments, like the CMS (Compact Muon Solenoid) for instance. Of course, it was also extra exciting for an informatics student to work right beside the office where the World Wide Web was born, and to be right next door to the CERN Data Center that is housing over 200 petabytes of important experiment data.

A quite strange thing is that I have had a dream about working at CERN ever since I was a child. My first encounter with the name CERN was during my childhood, when my father was telling stories around the dinner table about his work at CERN. He was actually a Summer Student at CERN back in 1986, but this was related to Physics and not IT. Afterward, he also worked at CERN on the DELPHI project in relation to his Ph.D. in Physics. My father was always speaking about this summer with so much joy and excitement. I was inspired by my father's stories about this fascinating place, and ever since then, it was a dream of mine to someday get the opportunity to work there myself.

So, you might understand that I was very excited about this summer internship, but I was also quite nervous. The fact that I was going to a foreign country, not knowing a single soul and working alongside (what I consider as) genius researchers for nine weeks, was honestly a very scary thought in the beginning. But of course, this was also what made it extra thrilling and exciting. Luckily, it turned out to be one of the best experiences and summers of my life!

Rebekka Alvsvåg

How many students were there with you, and where did you stay?

We were 37 Summer Students from 22 different countries; we were selected from over 1,500 applicants, so you can see that it is a very popular program. The only students from Scandinavia were one guy from Finland and myself. Quite a few students came from India, so now I suddenly have a big group of Indian friends and also a very good excuse to visit India in the near future!

For the two months, all of us were living together in an apartment hostel in the town of Saint-Genis-Pouilly in France, which is just across the border from Switzerland. CERN's 27 km long Large Hadron Collider stretches into both Switzerland and France. It was great to have the experience of living in France, which also has the benefit for students of being a bit less expensive than neighboring Switzerland.

Because of the housing situation, we soon became nearly like a family and we got inside jokes, funny memories and experiences together. We shared stories about the interesting people, the miraculously always sunny weather, the swims in the lakes and cool trips to nearby cities and countryside. We also had some amazing trips to the Jazz Festival in Montreux, the Gruyere Cheese Factory and the Cailler Chocolate Factory, and many beautiful hikes in Interlaken, the Jura Mountains and amazing views of the Mont Blanc in Chamonix. It really was the perfect place for a summer internship!

What did you do during your time at CERN?

During the CERN summer program, I was working in the IT-DB group. CERN openlab is a collaboration between CERN and leading ICT companies, including Intel, Oracle, Huawei, Siemens, and others. My project was based on a collaboration between CERN and Oracle. Therefore, my project focused on testing, evaluating and providing feedback about some of the latest Oracle technologies, as well as contributing to the Oracle Community. The objective of my project was to refactor an application called the DB Rota Tool, which is a web application for scheduling the support activities of the Database Services group. It is based on a technology called Oracle Application Express (APEX). As the name states, it is a technology that allows you to develop applications quickly. But it has some disadvantages, for example, that it is highly tightened to the database and it is not modular.

The main goal of my project was to make a new web application by improving the user experience and making it modular, portable and open to extensions. In my project, I was developing the new web application using Oracle JavaScript Extension Toolkit (JET) and Oracle Rest Data Services (ORDS).

Have you been interested in Oracle technology before your internship?

Unfortunately, I did not have much knowledge and experience with Oracle technology before my internship. Frankly, I got quite surprised when I learned that Oracle JET was open source and free for use. This is something that I see as a very positive thing when it comes to Oracle technologies and to reaching out to students and a broader user group.

What was your biggest learning for your career?

That I got to work on a hands-on and full-cycle IT development project. In this way, I got to learn about all the steps of the development process, from analyzing and getting the user requirements, as well as development, testing, security, continuous integration and deployment. I was very lucky to work with new technologies and real-world problems in a very inspiring, motivating and international environment with colleagues from all around the world.

Techs & Nerds

I also attended interesting IT lectures given by experts in their fields about topics such as Machine Learning and Cyber Security. Another very good learning experience was to hold technical presentations about my project in a 5 minutes long CERN Lightning Talk, and a 20 minutes long presentation for the IT-DB group. I will definitely take with me all of these experiences in my future studies and career!

Did you get the chance to visit some of the CERN experiments as well?
Yes, we were very lucky to get the opportunity to visit some of the CERN experiments and accelerators. For instance, we visited the ATLAS (A Toroidal LHC Apparatus) and CMS

experiments, which are detectors on the Large Hadron Collider. This was really cool and exciting to see and something I will remember for the rest of my life!

Have you always been interested in technology?
Yes, I would say that I have been interested in technology and science since I was a child. I think that my father is a big reason for that as well. He works with IT so we were the first in my class to have computers at home. My father was always encouraging my siblings and me to make computer games and program Lego Mindstorms Robots in our living room, so the interest in technology and science probably grew from this.

Techs & Nerds

How would you motivate especially girls and women to get an interest in technology?

At the time being there are unfortunately few women in the fields of technology, and that is a pity. I think it is very important that we dare to make career choices that are not traditional, and it is important to let girls and women know that technology and programming is a very exciting, fun and interesting field – and it is for everyone. There is no reason why there should be so few women in the tech industry. The pioneers of programming were women and Ada Lovelace was the first programmer in history. You may have heard about the examples where the first car airbags or early speech recognition programs did not work for women since the all-male development teams had not tested them on the metrics of women. This is one of many examples of why we need more diversity and both men and women in the field of technology. Technology is such an interesting field where it is always something new and exciting to try out and learn, and girls and women should not miss out on building the technology of the future. So if you like technology – take the chance and go for it!

What are your plans for the future?

My plans for the near future are to take an exchange year in Australia next year, finish my master's in Informatics and find a cool trainee program in a Tech company to start my career.

Will you stay within the Oracle cosmos?

I feel very lucky that I got the opportunity to speak about my CERN experiences at both Oracle User Group Norway Spring Seminar and Oracle Code Berlin this year. I am very grateful for all the interesting and exciting opportunities and experiences. All of this has given me a very good impression of Oracle and the Oracle Community, so yes, I hope I will be able to stay within the Oracle Community in the future.

Techs & Nerds

What to Expect from Oracle Database 18c

Maria Colgan

On-Premises and in the Cloud – Part 1

In July, Oracle released Oracle Database 18c for download on-premises, but you may recall, Oracle originally released 18c on the Oracle Public Cloud and Oracle Engineered Systems back in February. So, what can you expect from Oracle Database 18c and how will the on-premises version differ from the version running on the Public cloud? Read on for the first part of Maria Colgan's introduction to the most useful improvements.

Oracle Database 18c is the first version of the database to follow the new yearly release model. From now on, a new version of the Oracle Database will be released each year along with quarterly updates. An annual release gives customers access to new functionality sooner than ever before. More frequent releases means the volume of changes within each release will be far less than before, making it faster and simpler to adopt a new version of the database.

It's expected that each new version of the database will be made available on the Oracle Cloud first, followed a couple of months later by the on-premises release. This gives Oracle an opportunity to "harden" the new releases in the Cloud before making it available on-premises. You can find more details on this new release model and the simplified approach to patching in the Oracle Support **Document 2285040.1**.

You may be wondering what happened to Oracle Database 13c, 14c and so on. Don't Panic, you haven't accidentally missed six releases of the Oracle Database. Oracle Database 18c is in fact "Oracle Database 12c Release 2 12.2.0.2", the name has simply been changed to reflect the year in which the product is released.

So, what can you expect from this new release?
As you'd imagine, a patchset doesn't contain any seismic changes in functionality, but there are lots of small but extremely useful incremental improvements, most of which focus on the three key marquee features in Oracle Database 12c Release 2:

- Multitenant
- Database In-Memory
- Oracle Database Sharding

Maria Colgan,
Master Product Manager at Oracle Corporation
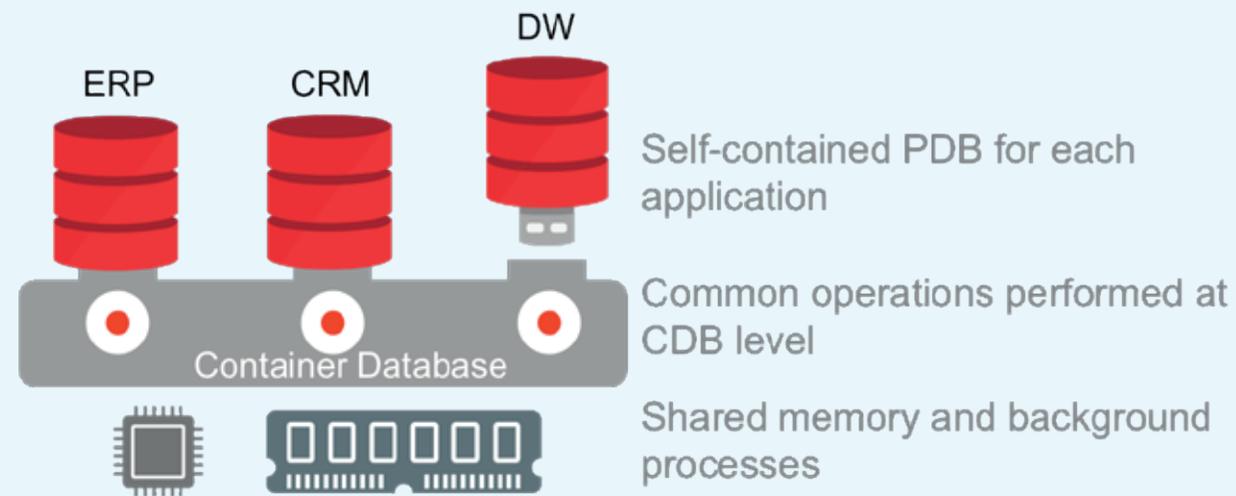
Figure 1 Oracle's new Multitenant architecture

Multitenant

With Oracle Database 12c came a major change in the database architecture. Instead of having a stand-alone database for every application, Oracle Multitenant provides a new database consolidation model in which multiple Pluggable Databases (PDBs) are consolidated within a Container Database (CDB). This allows the PDBs to share the memory and background processes of a common CDB, while keeping many of the isolation aspects of single databases.

The obvious benefit of this new approach is consolidation. By sharing memory and the background processes, you can accommodate more databases on a single server. There is also less administrative overhead, as you can manage multiple database as one, making backups and patching more efficient. But what is probably the most appealing part of the new architecture is the ability to unplug and plug a PDB from one CBD to another, making upgrading either the database software or the underlying server less painful.

With Oracle Database 12c Release 2 came the ability to provision a new database by hot cloning a PDB. Hot cloning allows you to create full copies of a production database for testing or development without interrupting operations on the production PDB. We have taken this a step further in Oracle Database 18c, as it is now possible to clone a PDB from an Active Data Guard Standby. We also further enhanced cloning with the introduction of Snapshot Carousel, which extends the recovery capability of a PDB beyond the default flashback retention period.

With Snapshot Carousel, regular snapshots are taken of a PDB, which can then be used in conjunction with the archive logs to create a clone of the PDB from any point in the past.

Techs & Nerds

For example, imagine it's Friday morning and I want to recover my PDB to a point in time of Wednesday at 11:17 am. It's no problem with Snapshot Carousel, as we simply restore the snapshot we took on Wednesday morning at 12:01 am and we recover from that point using appropriate archive logs until we reach the SCN for 11:17 am.

Another key enhancement was the introduction of Refreshable PDB Switchover, which enables users to create a PDB clone of a "master" PDB, in another CDB, that is incrementally updated. This gives users the ability to do a planned switchover from the master to the clone. I say planned switchover as the clone lags behind the master by several minutes, so you need to ensure the workload on the Master has stopped before conducting the switch over. Otherwise the most recent transactions on the Master will not be available on the clone. It's also important to point out that this feature is not using Data Guard; rather it extends the incremental cloning functionality we introduced in Oracle Database 12c Release 2.

Finally, in 18c, PDB backups are now portable. Previously, if you moved a PDB from one CDB to another, you effectively orphaned the PDBs backup and were required to take a full backup after the move. This is no longer the case as backups move with the PDB, which makes movement of a PDB from one CDB to another less cumbersome.

Database In-Memory
It's long been known that a column format is ideal for analytics, as it allows faster data retrieval when only a few columns are selected but the query accesses a large portion of the data set. Up until now the Oracle Database has only stored data in a row format. With the introduction of Database In-Memory, data can now be populated into memory both in a row format (the buffer cache) and a new in-memory optimized column format, simultaneously.

Figure 2 Oracle's unique dual-format in-memory architecture

The database maintains full transactional consistency between the row and columnar formats, just as it maintains consistency between tables and indexes. The Oracle Optimizer is fully aware of what data exists in the column format and automatically routes analytic queries to the column format and OLTP operations to the row format, ensuring both outstanding performance and complete data consistency for all workloads without any application changes. There remains a single copy of the data on storage (in a row format), so there are no additional storage costs or redo/undo generated.

It's extremely easy to begin using Database In-Memory, as only two setup steps are required. First you need to allocate an In-Memory column store, which is a new component of the System Global Area (SGA), called the In-Memory Area. It is a static pool within the SGA, whose size is controlled by the initialization parameter INMEMORY_SIZE (default 0). Then you need to specify the new INMEMORY attribute either on a tablespace, table, (sub)partition, or materialized view, as only objects with the INMEMORY attribute are populated into the In-Memory column store. Once the objects are populated, your application will automatically begin utilizing the columnar format for any analytical queries.

Starting in Oracle Database 18c, the management of the In-Memory column store can be automated with the help of Heat Map data. When Automatic In-Memory is enabled, if the size of the objects that have the INMEMORY attribute exceeds the size of the In-Memory column store, and there is no room to populate a new object, the least active object(s) will be evicted to make enough room to populate the new object.

And it's not just the population of the In-Memory column stores that has been automated in Oracle Database 18c,

so has the parallelization of in-memory scans with the introduction of In-Memory Dynamic Scans (IMDS). With IMDS, when additional CPU resources are available, Database In-Memory will automatically parallelize the scanning of data in the In-Memory column store. It does this by utilizing multiple lightweight threads within a process. This allows Database In-Memory to further increase scan performance by utilizing idle CPU resources. Note, Oracle Resource Manager is used to ensure IMDS does not impact the performance of other database tasks.

In 18c, you also have the ability to place data from external tables in the In-Memory column store, enabling you to execute high performance analytics on data outside of the database.

Finally, Oracle Database 18c saw the introduction of a new in-memory optimized NUMBER format for faster aggregations and other arithmetic operations on numeric columns using SIMD vector processing.

To be continued
This was the first part of two articles that look at the most useful improvements of Oracle Database 18c. The second part of the article will be published in ORAWORLD #12.

Techs & Nerds

BettyBot – The Warehouse Robot at Work

Martin Meyer

Interested in what the future of logistics will look like? Then watch this video and see how a group of 100 high-speed robots from manufacturer Kiva helps to complete up to 30,000 online orders a day at Quiet Logistics in Devens, Massachusetts. From click to ship in only 15 minutes is no longer a challenge with the help of these robots called BettyBots. They are able to move items in a fast and efficient way in a 30,000 square feet (2,787 square meters) warehouse with 1.5 million different items stored. No surprise that the orange robots can work faster and more accurately than any human ever could.

Techs & Nerds

Heli Helskyaho

When in Paris...

During 2018, Oracle has run a series of **developer events** around the globe and Heli Helskyaho has been lucky to be able to attend quite many of those: Los Angeles, New York, Boston, Warsaw, and finally Paris, which was the last one of the series. Read on for her report on the event and the fabulous city.

I do travel a lot but believe it or not this was my first ever visit to Paris! For this particular reason I decided to stay in Paris for a couple days extra to be able to see the city and visit all the famous tourist attractions.

Business before Pleasure
The conference started with a speakers' dinner with delicious French food. Thank you, Oracle! I had the pleasure to sit next to Stew Ashton who, as a native born in Kansas City, has lived in Paris for decades. Stew gave me great advice on what to

see in Paris and in Kansas City, which funnily enough will be my next place to visit.

The conference was held on July 3 at the New Cap Event Center very close to the Eiffel tower. It started with the welcoming words from Oracle and a keynote by Lonneke Dikmans. Lonneke was talking about orchestration in modern architectures. The event had four tracks with some hands-on labs. I think the day was very interesting and based on the feedback I heard, I was not alone with my opinion.

Users & Groups

Where's the Nearest Museum?

Since I was in Paris, of course I wanted to see the Louvre – and it is everything they say and much more! I also wanted to see as many of the other museums as possible. My favorite of them all turned out to be Musee d'Orsay which is located in an old railway station. The amount of Renoir, Monet, van Gogh, Pissarro etc. that they had in that museum was just unbelievable. And it was fantastic to see Finnish art there, too. And, of course, you cannot go to Paris without seeing Le Penseur either.

I walked along the Seine river and saw the beautiful architecture and so many famous buildings. It was really lovely to breathe the Paris atmosphere.

During these few days I walked about 50 kilometers and saw a lot, quite enough to know that I want to go back! Paris is a fantastic city with so much to see and, of course, delicious food.
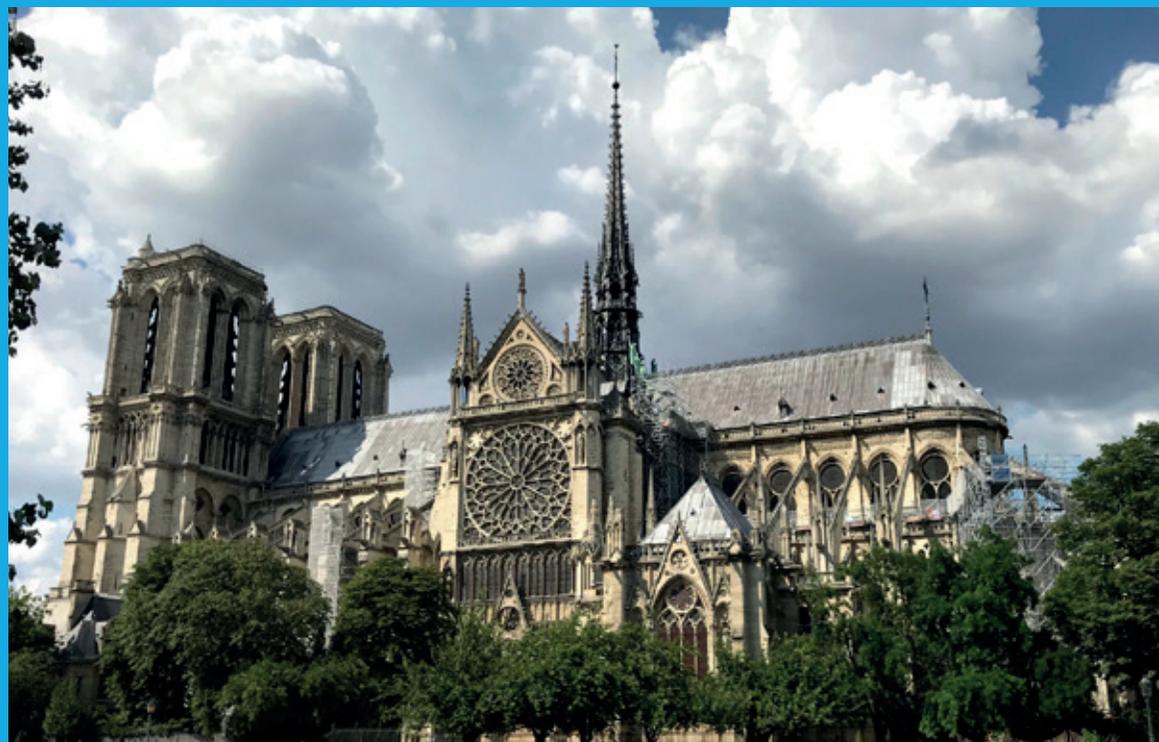
Celebrating the 10th Anniversary of KCDC

Heli Helskyaho

Last year at the Devoxx event in Casablanca, Morocco, Heli Helskyaho met Jeff Strauss and Jon Mills, who told her about Kansas City Developer Conference (KCDC), a developer conference they are organizing once a year with some friends. The conference is for all kind of developers and this would be the tenth time it's been organized. They did not need to convince her for long to get her to want to attend this year.

I arrived at the hotel in Kansas City around two am on Tuesday morning to realize that the hosts, Jon and Jeff, were waiting for me to welcome me to the event. That is true commitment! On Tuesday, I had a day off and I used that day to recover from the long journey and the jetlag by doing some sightseeing in Kansas City and running the complimentary street car.

Meeting Old and New Friends

In the evening, I was invited for a dinner at Jennifer Wadella's house. She made us amazing paella and we had such a great time meeting other speakers. Jennifer is very active on all kinds of diversity activities in the Kansas City area and based on the fact that there was a constant line to the ladies' room during KCDC, I think she and the team are doing a great job!

On Wednesday, I ran a workshop on database designing. I know it is not a very hot topic nowadays but I was glad to see that the KCDC attendees knew that database designing is an important skill to have! After the intensive workshop day, it was time to join the KCDC Diversity Kickoff, and after that the speakers' dinner. On Thursday and Friday, I attended several sessions. All the presentations were very high quality

and highly interesting. Especially hearing about different technologies, not just the ones I use, was really interesting. The last session of the day on Thursday was my talk about Big Data and the multi-model database. After my session, I quickly ran to my hotel to change and then attended the Okta Developer Dinner and the KCDC attendee party.

More Than Just One Conference

After the closing of the conference on Friday I attended the PubConf. It was an unofficial conference organized in a pub. The speakers were given a short time to present us a topic that could be anything and extremely funny. After the first round, the finalists were selected. They were given a topic they knew hardly anything about and pre-prepared slides they were told to explain to us. It was so funny! I cannot remember laughing so hard ever before!

Even though the conference was over, it actually was not: On Saturday, there was the kids' conference (KC2). I volunteered for that and my job was to assist the kids in making slime. That was fun! My slime stand was so popular, we ran out of ingredients in two hours! The booth was crowded already one hour before the event officially started until the moment we were forced to close it.

KCDC was fantastic! In so many ways. But what impressed me the most was the staff: daughters and sons of the organizers. They were so well-behaved, helpful and fantastic young people! This user group has a bright future!

Congratulations, KCDC! Ten years is an amazing achievement! Happy birthday and many more years to come! And thank you for letting me be part of your anniversary!

Everybody: Join us next year on July 17-19, 2019!

Ambassador's Corner

Ami Aharonovich

Dear user group leaders,

Oracle Open World 2018 is just around the corner beginning on Monday, October 22, with more than 1,000 sessions delivered by Oracle executives and speakers from all over the world. This year, the EMEA Oracle User Group Community (EOUC) will have a total of eleven sessions while ten sessions will be led by the top speakers representing the EOUC, as well as an additional unique session which will include some of the EMEA Oracle ACE Directors sharing their biggest errors and what they have learned from it – a unique, fast and fun session that will energize you on your Oracle Open World 2018 experience. We are looking forward to seeing you in our sessions. Here's a short list of all EOUC led sessions:

Date	Time	Session Title	Speakers
2018-10-22	09:00	Using Deep Learning and Natural Networks in Oracle Database 18c	Brendan Tierney, Oralytics; Neil Chandler, Chandler Systems Ltd
2018-10-22	15:45	Do We Still Need to Design Databases?	Heli Helskyaho, Miracle Finland Oy
2018-10-22	16:45	How to Build a Decentralized Blockchain App with Oracle Blockchain Cloud Service	Robert van Mölken, AMIS
2018-10-23	11:15	DBAs Versus Autonomous Databases	Julian Dontcheff, Accenture Oy
2018-10-23	12:30	Microservices and APIs: What's the Buzz	Lonneke Dikmans, eProseed Europe s.a.
2018-10-23	15:45	Even the ACEs make Mistakes – What did they learn?	Debra Lilley, Certus Solutions an Accenture Company
2018-10-23	16:45	Unlock the Value from Your SaaS Data Using Oracle Cloud Infrastructure	Kiran Tailor, Association of International Certified Professional Accountants
2018-10-23	17:45	Major Retailer Transforms Business Landscape with Oracle ERP Cloud	Sidhartha Dash, TCS
2018-10-24	15:45	Oracle Application Express Applications on Oracle Database Exadata Express Cloud Service	Alex Nuijten, allAPEX; Roel Hartman, APEX Consulting
2018-10-25	13:00	Oracle HCM Cloud Applications: Build Your Own Chatbot	Debra Lilley, Certus Solutions an Accenture Company; Tim Warner, Certus Solutions an Accenture Company
2018-10-25	14:00	10 Things You Should Know About Oracle and Kubernetes	Michel Schildmeijer, Qualogy Holding B.V.

Users & Groups

The next EOUC leaders' meeting will be held during the DOAG conference in Nuremberg, on Monday, November 19. If you are a user group leader in EMEA, then you are invited to take part in this interesting and inspiring meeting where all EMEA leaders are working together for better collaboration and sharing to enable both improvement and growth of the global Oracle User Group Community.

Last reminder for EMEA user group leaders, please keep in mind to send us your contact e-mail address so that we can add your user group to our mailing list which is maintained by the EOUC ambassadors.

We are looking forward to seeing many of you in both Oracle Open World in San Francisco and at the EOUC leaders meeting at the DOAG conference in Nuremberg.

Please feel free to contact us with any question or feedback you might have.

Yours,
Ami Aharonovich

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Users & Groups

Call for Papers

Collaborate 19

Until November 2, 2018
San Antonio, USA
http://collaborate.ioug.org/page/callforspeakers19
http://collaborate.oaug.org/presenterinfo
http://questoraclecommunity.org/events/conferences/
collaborate/call-for-presentations/

2019 Spring Conference

Until November 15, 2018
MS Color Fantasy Oslo-Kiel-Oslo
https://www.ougn2019.com/speakers

Full Stack Developer Conference

November to December, 2018
Helsinki, Finland
CfP@fsdc.fi

Past & Future

Events

MakeIT 2018

October 15-16, 2018
Portoroz, Slovenia
http://www.makeit.si

HrOUG 2018

October 16-19, 2018
Rovinj, Croatia
2018.hroug.hr

Oracle OpenWorld 2018

October 22-25, 2018
San Francisco, USA
https://www.oracle.com/
openworld/index.html

BGOUG Autumn Conference

November 16-18, 2018
Pravets, Bulgaria
http://website.bgoug.online/en/
events/details/102.html

DOAG 2018 Conference + Exhibition

November 20-23, 2018
Nuremberg, Germany
2018.doag.org/en/home/

UKOUG Technology Conference & Exhibition 2018

December 3-5, 2018
Liverpool, UK
info@ukoug.org

UKOUG Applications Conference & Exhibition 2018

December 3-5, 2018
Liverpool, UK
info@ukoug.org

UKOUG JD Edwards Conference & Exhibition 2018

December 4-5, 2018
Liverpool, UK
info@ukoug.org

OUGN 2019 Spring Conference

March 21-23, 2019
MS Color Fantasy Oslo-Kiel-Oslo
https://www.ougn2019.com

Javaland 2019

March 19-21, 2019
Brühl, Germany
https://www.javaland.eu/en/home/

Collaborate 19

April 7-11, 2019
San Antonio, USA
http://collaborate.ioug.org/
http://collaborate.oaug.org/
http://questoraclecommunity.org/events/conferences/collaborate/

Full Stack Developer Conference

May 21-22, 2019
Helsinki, Finland
www.fsdc.fi

Imprint