

# Analog Tussle

Enough of being Digitized, Think you know all about Analog? Well then, take this test and find out.

## Steps to participate in Round 1

1. Attempt the quiz Analog Tussle Round 1 after reading the instructions carefully.
2. Starting date of Round 1 will be announced soon.

## Round 2

A design problem corresponding to the theme will be uploaded 20 days prior to the competition in Quark 2017. Participants have to upload the solution set before a given Deadline. The participants who would clear the Second Round will be invited to Quark 2017 for the final Round.

## Round 3

The third round would comprise of participants being divided in teams. They would have to design the electronic schematic of a certain project within the prescribed time with a list of predefined equipment list and budget. These schematics will be uploaded on Proteus. The scores will be allotted on various measures, (Cost effectiveness, Power, Durability).

The team with maximum score would win.

# Analog Tussle

## Rules of Participation.

- Maximum number of people in one team is 3.
- The first round, which is online quiz, will have 20 questions to be solved in 20 min. One team should take 1 quiz only.
- The abstracts that have to be submitted for round 2 must contain the solution to the design problem in clear, concrete and precise manner. Only one solution per team has to be submitted.
- While implementing the design, partial and erroneous outputs will not be accepted.

# Arduino Open

This event is a battle of skill and technicality between teams who are expected to solve simple to complex problem statements based on their pre-existing knowledge of Arduino and its interfacing. This fun-filled event will consist of Two Rounds

## Round 1

This round consists of participants solving tricky problems on Arduino Programming and Interfacing. Beware the questions might be slightly tricky! Time is a constraint. Faster you solve the more you score!

## Round 2

The shortlisted teams from Round 1 are to compete with each other. This round has a higher difficulty level. May the best team win!

## Judging Criteria

- Time
- Points
- Creativity
- Practicality
- Simplicity

# Arduino Open

## Rules of Participation

1. Each team shall consist of ONLY 2 participants.
2. Participants are required to bring their own Arduino boards and laptops with Arduino IDE.
3. All the hardware components required will be provided except the Arduino boards.
4. Datasheets and pin diagrams will be provided if necessary.
5. We will try our best to provide you with internet connection however; we are not responsible for bad Wi-Fi connection during the event. You are allowed to bring your own source of internet.
6. Participants may use the reference given in Arduino IDE under Menu->Reference.
7. Any violation of rules or mishandling of equipment would lead to immediate disqualification.
8. Decision of the Jury is FINAL and is to be abided by in any case.

Practise last year's problems on: <link>

# Digilogica

Do you think that Digital Design is just a boring course just about gates and logic? Well you're in for a huge surprise! Welcome to the vast world of digital logic! Get ready to go beyond with counters, multiplexers, flip flops, encoders, decoders and much more and be prepared to be challenged at a whole new level!

## General Rules

- Each team shall consist of a maximum of 3 participants.
- Any sort of malpractice or mishandling of equipment will lead to immediate disqualification.
- Decision of jury is FINAL and is to be abided by in any case.
- The above rules and judging criteria are subject to change based on the jurisdiction of the Event Managers.

## Round 0

A Pre-Quark Wild Card event, which gives the winners direct entry to the second round. You think it'll be easy? Brace yourself, Winter is Coming! Get ready for November, which will challenge you to a quick mock-compre, which will be a surprise event. So be prepared for any format, be it a Quiz where the top two teams qualify for Round 2, or, a round of Digital Circuit Designing to your Wild Card ticket to Round 2. The conventional way (Round 1) or this way, the Choice is Yours!

# Digilogica

## Notes:

- Beat others to be among the Top 2 teams, to qualify for Round 2.
- Series of challenging surprises await you!
- The judgement will be based on Perfection and Accuracy and will be easy to conquer. So expect high cut-offs!

## Round 1

A rapid series of mind puzzling MCQs with sand trickling down the hourglass. How many of these basic digital electronics questions can you answer in the given time?

## Notes:

- Teams would be short-listed for the next round based on the quiz score.
- In case of a tie, the completion time will be taken into account.
- This round is to be attempted online from any location convenient for the team.
- The questions are of variable weightage, and negative marking would be there.

## Round 2

Teams will have to design a combinational/sequential circuit as the solution to the given problem. A hardware implementation of the design has to be done on breadboard using the components provided. Datasheets and pin diagrams will be provided if necessary.



# Digilogica

## Notes:

- Correctness and efficiency of the design will be considered.
- Final and intermediate outputs of the hardware implementation will be observed and will be given high weightage.
- In case of a tie the time taken for the design and the implementation as well as the neatness of the circuit would be taken into consideration.
- This round will be carried out in the digital electronics lab at BITS Pilani K. K. Birla Goa Campus. All equipment-power supply, function generator, wire stripper, breadboard, etc. will be provided.

## Round 3

Just like the previous round, the teams have to design a digital circuit for the given problem. However, this one will be on a completely different level. Get ready for a serious dose of mind screwing! A simulation of the design on Lab centre Proteus (version 7.10) will decide who will carry home the trophy.

## Notes:

- Correctness and efficiency of the design will be considered
- Marks will be given only for final and intermediate outputs of the simulation.
- In case of a tie the time taken for the design and the implementation will be taken into consideration.
- Teams are advised to install and be well versed with the software beforehand

# Embition

This year's Embition will put to test your creativity and technical skills. You will find that your spelling skills are just as important as your coding!

Think you're good at your skills!?! Why not apply to make a difference! This quark, think different, create an impact. Presenting you with event Embition.

## **Rounds**

The teams will be given a real life problem, which they will have to model to small scale and implement it using their knowledge in coding and hardware components.

## **Rules of Participation:**

1. Each team shall consist of maximum of 3 participants.
2. Participants are required to bring their own development boards (e.g. Arduino, Raspberry Pi, Beagle Bone etc.).
3. All the other hardware components required will be provided.
4. Datasheets and pin diagrams will be provided if necessary.
5. Any violation of rules or mishandling on equipment would lead to immediate disqualification.
6. Decision of the Jury is FINAL and is to be abided by in any case.



# Matmania

**C++ or Java?**

**TOO OLD**



# Matmania

The 4<sup>th</sup> generation Programming language and Interactive environment 'MATLAB' hackathon in QUARK 2017!

Don't have a firm grasp of the language? No worries! Links for the necessary tutorials are given below.

## **ROUND 1**

It will be a General Quiz on MATLAB, covering syntax, features and data types.

## **ROUND 2**

It will be based on a simulation of a system in SIMULINK.

\*Participants should know their way around the basics of SIMULINK.

## **ROUND 3**

It will be based on basic Signal Processing and Image Segmentation.

# Matmania

## RULES

- You can have a team of maximum 3.
- The Qualifying teams will be those who have solved the problem correctly within the least time (In case of a tie).
- In case of an alternate method to solve the problem, it will be considered as long as the results are within the limits of error.

## RESOURCES

- SIMULINK Tutorials: [http://ctms.engin.umich.edu/CTMS/index.php?aux=Basics\\_Simulink](http://ctms.engin.umich.edu/CTMS/index.php?aux=Basics_Simulink)
- Communication Systems in MATLAB: [http://www.mathworks.in/academia/student\\_center/tutorials/signal-processing-tutorial.html](http://www.mathworks.in/academia/student_center/tutorials/signal-processing-tutorial.html)
- Image Segmentation: <http://in.mathworks.com/help/images/image-segmentation-1.html>