Experiment - 3

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Semester: 6th semester **Subject: Internet of Things**

Aim:

Demonstration of Autodesk Tinkercad Simulation Platform.

Objective:

1. Learn about IoT based simulations.

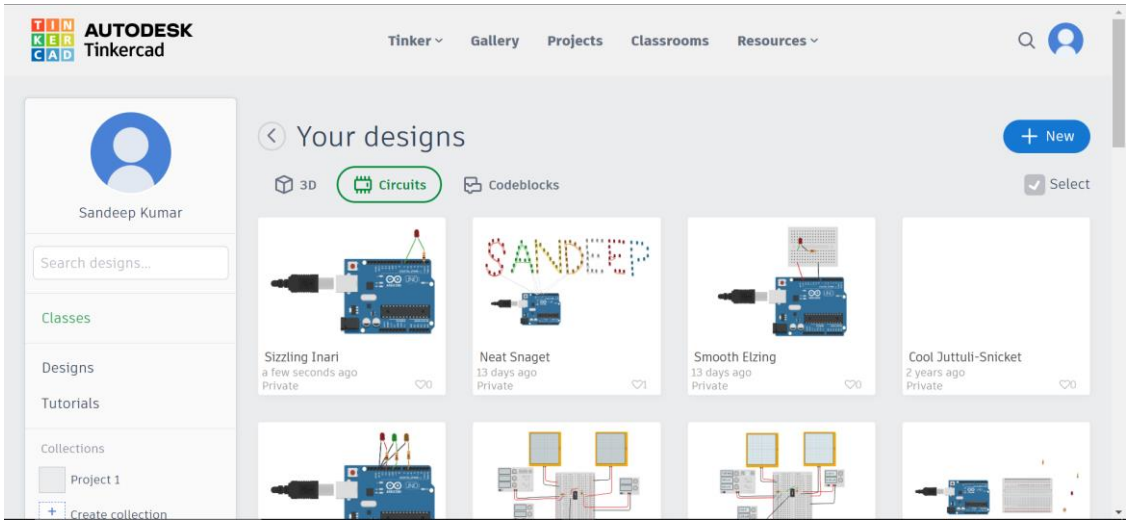
2. Testing and model in IoT based simulation platform.

Theory:

Introduction of Tinkercad:

Tinkercad is an excellent tool that allows you to simulate Arduino-based systems (and a lot more). You can (perhaps you SHOULD) simulate all exercises and even your own designs before trying them on real hardware. It also allows you to do programming using blocks. You can download / copy-paste the generated code later into Arduino IDE to program the real Arduino board, rather than having to write it from scratch.

Create a new personal account on Tinkercad website (you can also use your Google account to log in). Then select Circuits on the left pane, and click Create new Circuit.



Hardware

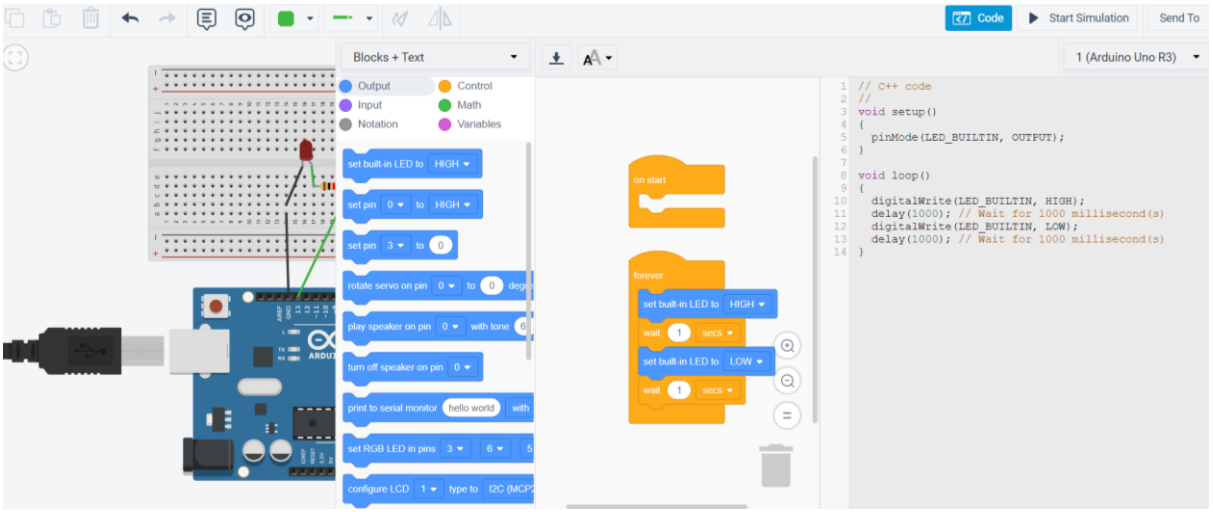
In Components Basic, you can select Arduino Uno R3.

Programming and Simulation:

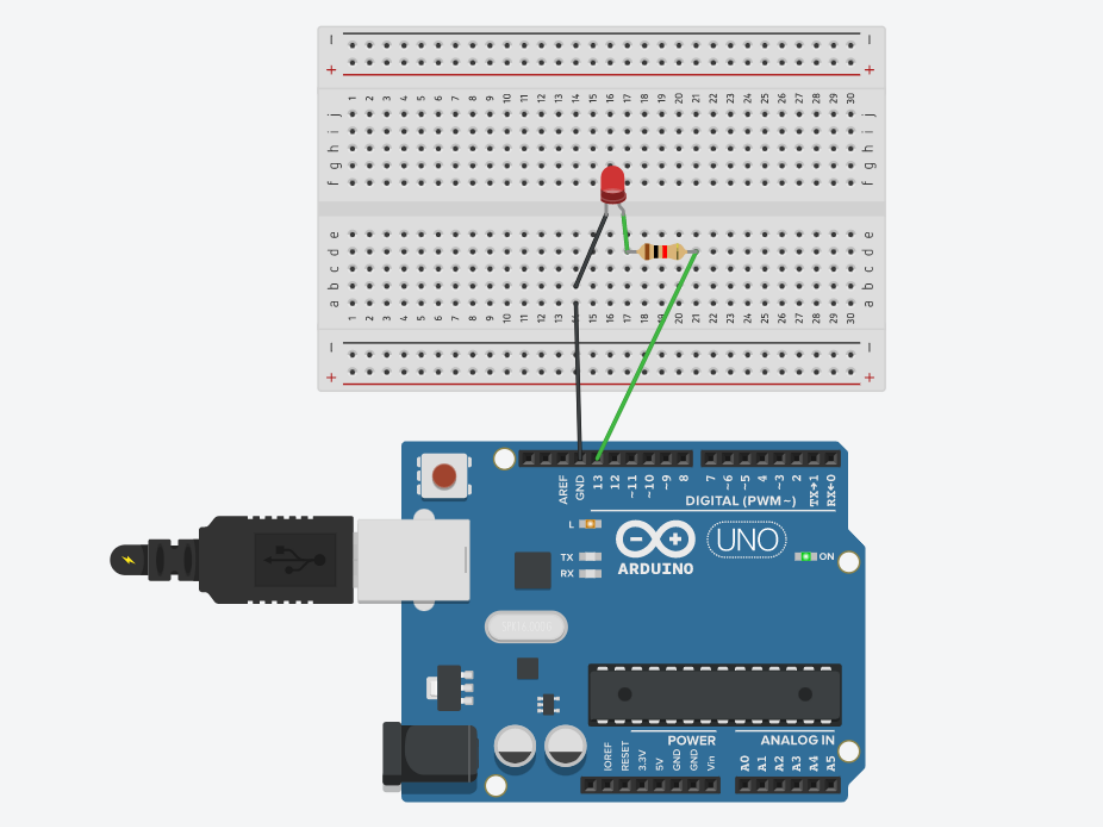
To program the Arduino,

1. Click on Code
2. You can choose Blocks or Blocks+Text or Text*. For beginners, it is recommended to use **Blocks + Text**.
    1. This allows you to see the C++ code generated corresponding to your blocks.
    2. You can copy this code later into Arduino IDE to program the real Arduino, rather than having to write it from scratch.
    3. You can also download the code as an Arduino-compatible .ino file.
3. You can code by selecting the blocks and connecting them appropriately.
4. You can start the simulation by clicking Start Simulation.

*Note : You can go between Blocks and Blocks+Text anytime. You can go from Blocks / Blocks+Text to Text, but you can't go back from Text to either of the other two (converting blocks to text is easy, converting text to blocks is computationally non-trivial).



Simulation:



Learning Outcomes:

- Learn about IoT based simulations.
- Testing and model in IoT based simulation platform.
- Understanding the basic application and usage of the IOT devices.