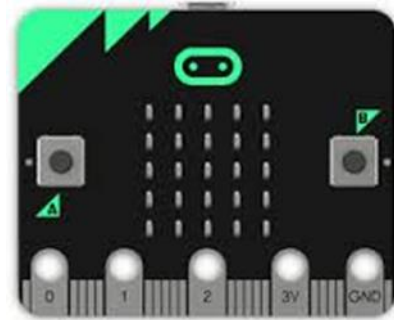


## Making Technology Fun – Learning Computer Programming with Makecode & Microbit

*Come learn about the wonderful world of programming with Microbit!*

Topics we cover –

- Introduction to writing code with Makecode
- Overview of Computer applications with Microbit
- Learn about interacting with devices, wearables & Robots
- Introduction to writing simple games
- Introduction to Radio (wireless) based applications



***In this 8-10 weeks course, we would introduce computer programming concepts, applications we are seeing around us and how students can develop their logical thinking abilities!***

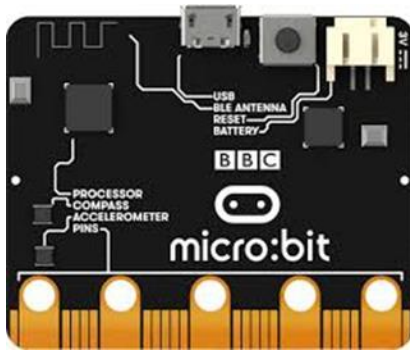
### Key Takeaways

- ✓ Gain an understanding of how logic is developed using flowcharts & pseudocode
- ✓ Equip students with the necessary skills of logical thinking in computer programming
- ✓ Gain exposure to working with devices & computer code.

### Participant Profile

The course is designed for middle & high school students:

- **Middle school students Grades 5-8 interested in Math & Science subjects**
- **High school students (9 -10)** who have exposure to Computer Science and Programming languages, looking for experience in development of applications using computers embedded in wearables, art works & robots of various forms



- Students learn Computer concepts like -
  - Algorithms, use of variables,
  - Managing conditionals with logic blocks,
  - Concepts of iterations & looping,
  - Boolean data types to control flow of a program,
  - Bits, bytes & binary system and
  - Using data structures like Arrays

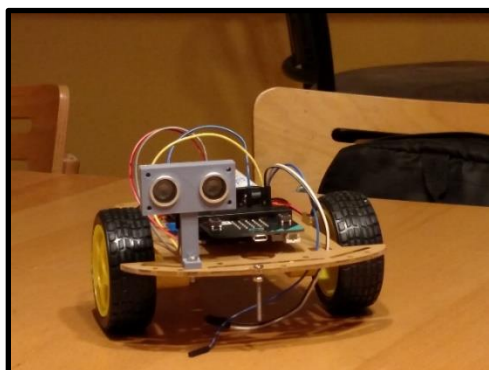
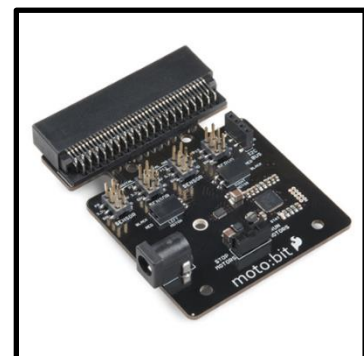
- Overview of Blockly based programming using Makecode
- Overview of the Microbit display as a coordinate grid system
- Learn about using the Radio to develop interactive applications

### **Building simple programs using various components (sensors)**

- Accelerometer - Use of Accelerometer sensor (use Shake) to make microbit perform tasks like play notes!
- Compass - Use of Compass Sensor to show directions
- Temperature sensor – Use temp sensor to demonstrate change in temp on the CPU of the Microbit
- Light sensor – Use light sensor to plot change in “visible light” as a bar graph.
- IR sensor – Use IR sensor to detect obstacles

### **Robot Projects with Motobit**

- Build the Robot car and make the wheels turn
- Make the Robot detect “Black” line
- Make the Robot stay in the “Black” box & escape from one exit point
- Make the Robot follow a “Black” line



- Make the Robot cross one “Black” line, pause and move forward to stop at another line.
- Make the Robot navigate a “maze”
- Make Robots accept commands in master/slave mode – dancing robots!
- Develop 3D parts for Robot using modeling tools and 3D printing.