Presentation Content

1) Hands-On!
2) How to download?
    a) PC
    b) Mobile APK/IOS
    c) Chrome Browser or other browsers
3) Explain each block from the built-in blocks.
    a) Built-in blocks
        i) Blocks vs Code
            (1) Advantage
            (2) Disadvantage
            (3) But why blocks help us?
            (4) Blocks as Visual Aid
            (5) Using Makeblock to inspire others to like computers
        ii) Doer Blocks and Value Holder Blocks
            (1) Doer Blocks (aka Functions)
                (a) It does something
                (b) It can use values from you (user input)
                (c) It can use values from value holders
                (d) It can give a value to a variable and to another function (return)
                (e) Other complex function concepts
                    (i) Recursion (a function calling itself)
                    (ii) Function as a function argument
                    (iii) Functions giving functions
            (2) Value Holder Blocks (aka Variables)
                (a) It still does something: It only hold values
                (b) Why mBot need variables
                    (i) For the mBot to remember information from his surroundings
                    (ii) For the mBot to manipulate data or information
                        1. It will use the information for deciding his actions
                            a. Example: If true then do that, if false, do this instead
                        2. To do calculations (algebra)
                            a. The importance of variables in algebra
        iii) Types of Variables
            (1) True or False (Boolean)
            (2) Numbers (Integers, Float, etc)
            (3) Strings (words, collection of characters)
                (a) Characters: ASCII code
                (b) Unicode: can represent 143,000 characters
                    (i) These are the commonly used types of variables in MakeBlock.
        iv) User Input:
            (1) String input
                (a) Holes in the blocks
    b) Extension blocks

c) Extension blocks: More Options
    i) Specifying each of the mBot Ranger's motor's power and direction

4) Programs
    a) Line Tracing
        i) When mRanger starts
            (1) It will do forever:
                (a) Check if the light sensor, senses
                    (i) Black black
                        1. On track
                        2. forward
                    (ii) Black white
                        1. Partially on track
                        2. Turn left
                    (iii) White black
                        1. Partially on track
                        2. Turn right
                    (iv) White white
                        1. Lost from track
                        2. Backward
    b) Sumo Bot
        i) When mRanger starts
            (1) It will do forever:
                (a) Go forward
                (b) Check sonar sensor
                    (i) If an object is:
                        1. Not sensed
                            a. Distance > 100%
                            b. Change the speed to 40%
                        2. Sensed but not that close
                            a. Distance < 50%
                            b. Change the speed to 60%
                        3. Sensed, and it is close
                            a. Distance < 10%
                            b. Change the speed to 80%
                (c) Check light sensor
                    (i) If the floor is black
                        1. Go backward
                        2. Turn a certain degree (say 60 degrees)
                            a. Motor 1 backward
                            b. Motor 2 forward
                            c. Wait for a certain time (0.5 seconds)
                (d) Change lights color base on action done
                    (i) Red – an object is close
                    (ii) Orange – Sensed but not close

(iii) Green – Not sensed
(iv) White – The floor is black
(v) Pink – Going backward (after knowing: the floor is black)
(vi) Blue – Turning (after going backward)

5) Arduino C
   a) C Language
   b) Conversion of MBlock's blocks into codes
6) Sprites
   a) Using mBlock without a physical robot
   b) Line tracing using sprites