Centum Charitas Foundation x HoC AI Coding Class for Primary School – Course Content

Number of target students : 20 P3-P6 students per class, 5 classes total 100 students (with parents total can reach 200 pax)

Minimum need to conduct 1 class

Class Hours : 9 hours, 3 hours for each lesson (Basic -> Intermediate -> Practical)

(Suggested Lesson 3 to be arranged on Saturday am/pm session, so parents could join together)

Class venue: School IT room/ class room

Course key features：

- **Understand the basic coding technique from basic**
- **Suitable for new coding learner and accompany by parents without experience**
- **A good start of learning step to physical computing coding**
- **course adopt to existing AI Technology trends**
- **Practical project makes the learner easier to understand**

Objective :

The classes are focused on basic coding techniques using micro:bit and block-based programming. It will also go through the use of micro:bit as physical computing, bridging software and hardware. This also go through the process of programming, debugging and calibrating when errors are found in coding. As the technology evolves, we encourage the students to further study by themselves after they completed the basic classes. It helps to make the AI learning in a sustainable way.

Learning Materials :

1. micro:bit V2.2 starter kit (w/ 1m USB, on/off battery holder & 2 x AAA battery)

2. micro:bit sensor pack (for 1st class, will share with other 4 remaining classes)
   - basic:bit
   - LED strip
   - PIR motion sensor
   - 180 degree servo
   - soil moisture sensor
   - 2 x LED (Red, Green)
   - Rotary Potentiometer

3. AI light learning kit (for 1st class, will share with other 4 remaining classes)

      AI Light material (paper cardboard, wooden stand, LED strip, connecting wires & accessories)

      Wukong extension board

      AI Voice Recognition module

Class content:

Lesson 1 (3 hours)	• Introduction of Computational Thinking and up-to-date Physical Computing technology • Introduction of micro:bit and Makecode • Basic function : Input/output of micro:bit • Variable and Loops - make a step counter • Conditions (If-then-else) – example : Rock, Paper & Scissors • Make a compass • Light sensor & music player • Make a Thermometer • Radio Communication and Morse Code • Remote control device – Remote car demo

Lesson 2 (3 hours)	• Physical project implementation w/ micro:bit
	• Extension board - basic:bit and Concept of GPIO (General Purpose Input/Output)
	• Add Extension in Makecode
	• Make a rainbow LED strip (usage of extension & GPIO)
	• micro:bit PINs Usage : Concept of Analog & Digital signal
	   ✓ Control the LED on/off (Digital signal)
	   ✓ Control the brightness of LED (Analog signal)
	• Soil Moisture sensor to switch on the LED and extend to a water pump for automatic watering system
	• PIR Motion sensor to control the servo motor
	• Traffic Gate simulation (LIVE project making)

Lesson 3 (parents optional to join, 3 hours)	• Introduction of AI technology in our daily lives
	• Make an AI Light w/ voice recognition module
	• Introduction of Wukong extension board and accessories
	• Basic functions (w/o external sensors)
	   ✓ Use micro:bit buttons and touch sensors to change different light signals and music
	   ✓ Use different input value (light, volume & temperature to change different light signals

	• Advanced functions (IOT & AI Technology) ✓ Change different light signals through the broadcast function ✓ Expand the voice module to control lights with customized commands (AI voice-controlled lights) ✓ Design solutions to everyday problems through expanded voice modules + programs ✓ Add a sense of technology to life through expanded voice module + MP3 module (AI music playback atmosphere light)

** All class notes and materials will be provided

Cost for 1st class (hardware & course) : HKD$49,800
Cost for following classes (2nd-5th) Instructors fee and micro:bit x 20 (other hardware to be shared) : HKD$32,200

Arrangement of applying Knowing More About IT in Primary Schools (If applicable)

1) **If you are interested to apply the course, can reference with the attached application form template to apply Knowing More About IT in Primary Schools (Approval time around 2 months).**

2) **When the funding approved, can contact Centum Charitas Foundation to apply the class (please accept to have 3 weeks buffer for class preparation to arrange instructors)**

If you are interested and have further enquiry, please call Centum Charitas Foundation Officer Mr. Edmond Lau at 27202823 or email to edmond.lau@charity-online.org