Introduction to IoT with Raspberry Pi

COMCAST

Module Description

Introduction to IoT with Raspberry Pi Teaching Module

The Comcast Austin Innovation Center has created this teaching module in an effort to provide kids with a hands-on introduction to the Internet of Things (IoT) by creating a project with a Raspberry Pi. This module was developed in Austin with the intention of being either hosted in the Comcast office in Austin or at a remote (school like) environment.

Module Overview

Students will be introduced to the concepts of Internet of Things (IoT), automation and be provided a brief explanation of the python programming language. The students will then be guided through the process of setting up a Raspberry Pi microcomputer and through the steps of the selected project. By the end of the module, each student should have created an IoT project using motion as a trigger for playing a sound.

Target Audience

The initial target audience for this module is kids in 5th to 8th grade.

Objectives

- Encourage interest in STEM education
- Introduce audience to IoT
- Effective community outreach
- Introduce and promote Comcast Austin Innovation Center

Equipment Required

Provided by Comcast

The following equipment and materials will be provided by Comcast Austin for each participant:

- Raspberry Pi
- Power adapter
- Micro SD Card (with OS)
- Jumper Wires
- Motion Sensor
- Speaker
- Bag
- Printout

Provided by Venue in a Classroom-style setup

The venue is expected to provide a classroom style set up with a projector for the presenter and workstation for each participant. Each workstation will have access to an electrical outlet and include the following equipment:

- USB Keyboard
- USB Mouse
- Display with HDMI adapter
- Power strip (connect display and Raspberry Pi)

Module Breakdown

Introduction by Presenter

The presenter will briefly introduce themselves and explain what the Comcast Austin Innovation Center is. They will discuss their job and some of the benefits of studying a career in technology.

The presenter will explain the module and discuss key terminology with students (ie: definition of IoT, automation, Raspberry Pi, Python, etc).

Lab

At this point the equipment will be distributed and the lab will begin. The lab consists of two parts:

- Setting up the Raspberry Pi – Approx. 10 minutes
    - Quick tour of OS – Approx. 3 minutes
- Conduct IoT project - Approx. 20 minutes
    - Discuss equipment and guide step by step
    - Allow students to demo completed projects

Conclusion

The presenter will discuss the concepts learned and take questions from the students.

Because students will be able to take home their Raspberry Pi, the presenter will guide them through shutting down and taking apart the microcomputer.

Students will be provided with resources to continue exploring what they can do with a Raspberry Pi.