SPEAKER NOTES

**Raspberry Pi – First Hour**

**Slide: Raspberry Pi**

What is a Raspbery Pi?

The Raspberry Pi is a low cost, credit-card sized computer that plugs into a computer monitor or TV, and uses a standard keyboard and mouse.

\*Hold up the pi to show how small it is\*

It is just like the laptops we use here at Code Ninjas and the computers you use at school or at home.

**Slide: Introductory Video.**

\*Play video

**Slide: What are we going to do with the Raspberry Pi?**

We will be making a web server to host and deploy various applications such as a basic website, a timer application, and a chat message application.

**Slide: What is a server?**

\*Play video

**Slide: Raspberry Pi Web Server**

This is where the Raspberry Pi comes in. The video talked about a web server being a computer. In our case, our web server is the Raspberry Pi and in the future when we have it set up, we can visit pages outside of our Raspberry Pi

**Slide: Web Server Flowchart**

This is a typical webserver flowchart which shows how web pages usually load on your computer. For our purposes, the webservers in the picture represents our Raspberry Pi.

Our computer sends a request, and the server replies back with a payload of JavaScript and HTML.

**Slide: Why should we use a pi?**

Typically web servers are running 24/7. A Pi is a cheap, affordable computer that can be easily replaced if broken. Raspberry Pis are able to run for long periods of time without breaking. This is why we use a Pi over say your home computer.

**Slide: Website? JavaScript? HTML?**

This week we’ll be using the Raspberry Pi web server to host websites.

\*Play video

For this camp, we won’t be going into HTML although it is optional. We will be working on something called the backend.

**Slide: Backend?**

There are usually two sides to website development. Frontend… and Backend. The Frontend deals with how a website looks and how information is organized onto it and the Backend deals with the storage of data and management of servers.

\*Play video

**Slide: Python**

We’re going to be using Python as the main language of development for this week. It’ll be how we’re going to code our Raspberry Pi to serve our webpage.

\*Play video

**Slide: Flask**

Alongside with Python, we will be using a web framework called Flask.

Flask is a web framework. This means flask provides you with tools, libraries and technologies that allow you to build a web application. This web application can be some web pages, a blog, a wiki or go as big as a web-based calendar application or a commercial website.

**Slide: GET and POST requests**

For our webserver, we want it to handle GET and POST requests.

A GET request is a request made by your computer to get information.

A POST request is a request made by your computer to give information or post it to the server.

\*Play video STOP at 1:30

**Slide: Let’s play around with the raspberry pis**

Have them set up the pis and mess around with it.

The video is a raspberry pi setup tutorial, if it isn’t set up yet.

**Python Fundamentals – Hour 2**

Have the kids go to <https://www.learnpython.org/>

They should be able to do:

* Hello, World!
* Variables and Types
* Lists
* Basic Operators
* Basic String Operations
* Conditions
* Dictionaries

<https://www.pythonforbeginners.com/files/reading-and-writing-files-in-python>

**Flask Server**

**Slide: What is Flask?**

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Feel free to reference the old slides if you think the children need help.

**Slide: Basic Flask Server**

Play the video.

I suggest building a server along with the video but you don’t have to.

**Portfolio Hosting**

**Slide: Let’s Get Ready!**

For our first project, we need:

* Laptop
* Raspberry Pi
* Keyboard
* Mouse
* USB
* Monitor
* Power Source

**Slide 2: Let’s get the starter files!**

Go to Google Chrome, go to the Code Ninjas Google Drive and have everyone download the entire Raspberry Pi “Starter Files” Folder.

**Slide 3: Let’s get coding!**

Putting the Raspberry Pis aside, open up the laptops and in the Windows application search bar search up IDLE. Click on the first search result.

Once everyone is there look up.,

Everyone type into the IDLE `print(“Hello World”)`

This command prints to console “Hello World”

If there is any red text on the screen let me know.

**Timer App**

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**Message Board**

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