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IoT Fundamental: Connecting Things

Started on	Saturday, 26 November 2022, 6:50 PM
State	Finished
Completed on	Saturday, 26 November 2022, 6:55 PM
Time taken	5 mins 29 secs
Marks	38.00/38.00
Grade	**100.00** out of 100.00

Question **1**

Correct

Mark 2.00 out of 2.00

What are two features related to Linux? (Choose two.)

Select one or more:

✓   open source ✔

an application for word processing

an example of interpreted language

a code base managed by one organization

✓   support by a community of programmers ✔

Refer to curriculum topic: 3.2.3
Linux is an open source operating system and maintained by a community of programmers. There are many distributions (or variations) of Linux and each distribution has its own code base maintained by an organization.

The correct answers are: open source, support by a community of programmers

Question **2**

Correct

Mark 2.00 out of 2.00

What is a Raspberry Pi?

Select one:

◯   a small, low cost, single-board computer ✔

◯   a Python function for conditional logic

◯   an object-oriented programming language

◯   a cloud-based service for teaching IoT

Refer to curriculum topic: 3.2.1

The correct answer is: a small, low cost, single-board computer

Question **3**

Correct

Mark 2.00 out of 2.00

What tool can be used on a Linux device to compare all installed software against a repository index, to download updates, and to install them automatically?

Select one:

○ Blockly

○ improved C Shell (tcsh)

○ Arduino

○ package manager system   ✔

Refer to curriculum topic: 3.2.3

A package manager can be used to upgrade programs and the Linux operating system. Package managers allow users to compare installed software versions against a repository index and then download and automatically install all updated software programs.

The correct answer is: package manager system

Question **4**

Correct

Mark 2.00 out of 2.00

What is the benefit of deploying a group of headless Pi IoT devices?

Select one:

○ Each Pi IoT device is managed remotely on a network.   ✔

○ A single monitor can be connected to the group of Pi IoT devices.

○ The Pi IoT devices can connect to each other using Zigbee.

○ The group of Pi IoT devices must be controlled by a single Pi device in the cloud.

Refer to curriculum topic: 3.2.2

The term headless is used to describe servers that are only remotely operated. A Pi can be set up to be managed entirely over the network and can be operated without the need for a monitor, keyboard, or mouse.

The correct answer is: Each Pi IoT device is managed remotely on a network.

Question **5**

Correct

Mark 2.00 out of 2.00

Which Linux shell command can be used to search a specific string of characters within a file?

Select one:

○ **cat**

○ **man**

○ **pwd**

◉ **grep**   ✔

Refer to curriculum topic: 3.2.3
There are many CLI commands in Linux, including these:

- **grep** – used to search for specific strings of characters within a file or other commands outputs
- **pwd** – used to display the current directory
- **cat** – used to list the contents of a file
- **man** – used to display the documentation for a specific command

The correct answer is: **grep**

Question **6**

Correct

Mark 2.00 out of 2.00

A system administrator issues the command **ps** on a server that is running the Linux operating system. What is the purpose of this command?

Select one:

○ to process a new task

○ to change file permissions

○ to display the contents of the current directory

◉ to list the processes currently running in the system   ✔

Refer to curriculum topic: 3.2.3
The Linux **ps** command is used to list the currently running processes in the system. If needed, this command can be instructed to display running processes initiated by the current user or other users.

The correct answer is: to list the processes currently running in the system

Question **7**

Correct

Mark 2.00 out of 2.00

Which Linux distribution is used to develop the Raspbian operating system for the Raspberry Pi?

Select one:

○ Mint

○ Ubuntu

○ Debian   ✔

○ Red Hat

○ Slackware

Refer to curriculum topic: 3.2.3
Raspbian, the operating system for Raspberry Pi, is a Debian Linux variation.

The correct answer is: Debian

Question **8**

Correct

Mark 2.00 out of 2.00

Which Python command is an example of conditional logic?

Select one:

○ **def**

○ **delay**

○ **if**   ✔

○ **from**

Refer to curriculum topic: 3.2.5
The commands **if** and **else** are used for conditional logic. The commands **for** and **while** are used for repetition logic, and **from** is for module importing.

The correct answer is: **if**

Question **9**

Correct

Mark 2.00 out of 2.00

To answer the question, you do not need the graphic. Why is it common to connect an Arduino board with a single board computer like the Raspberry Pi?

Select one:

○ The Arduino is a full computer and the Raspberry Pi is not.

○ The Raspberry Pi cannot process incoming digital signals.

◉ The Arduino has analog pins. ✔

○ The Raspberry Pi does not require software to interact with an Arduino.

Refer to curriculum topic: 3.2.6

Analog signals are generated by thermometers, light sensors, and air pressure sensors. A Raspberry Pi does not have analog pins and requires the use of another device to receive this data. An Arduino has analog pins and can then receive analog signals and data by connecting to a Raspberry Pi via USB.

The correct answer is: The Arduino has analog pins.

Question **10**

Correct

Mark 2.00 out of 2.00

What is a method to secure the control plane of an IoT device?

Select one:

○ the encryption of user data

◉ enforcement of authorized access to code ✔

○ restricting access to servers

○ verification of data integrity

Refer to curriculum topic: 3.1.3

Securing the control plane of an IoT device can be done by enforcing authorized access to code, removing any hard-coded debug access accounts, and keeping firmware upgraded.

The correct answer is: enforcement of authorized access to code

Question **11**

Correct

Mark 2.00 out of 2.00

Match the Linux administrative command to the function it performs. (Not all options are used.)

rm	remove a file or files	✔
mkdir	create a directory under the current directory	✔
cp	copy a file or files from source to destination	✔
mv	move a file or files to a different directory	✔
cd	change the current directory	✔

Refer to curriculum topic: 3.2.3

The correct answer is: rm → remove a file or files, mkdir → create a directory under the current directory, cp → copy a file or files from source to destination, mv → move a file or files to a different directory, cd → change the current directory

Question **12**

Correct

Mark 2.00 out of 2.00

A user is using Blockly to program a process to find the next 100 prime numbers after 2. Which block is best used for the task?

Select one:

○ FOR block   ✔

○ WHILE block

○ PRIME block

○ IF-THEN block

Refer to curriculum topic: 3.2.4
FOR loop blocks are used to repeat the execution of a specific block of code for a specific number of times. It is best used if the number of repetitions is known. In this case, the repetition number is 100. The FOR block can execute 100 times, each time to find a prime number. After 100 prime numbers are found, the FOR block will stop the execution.

The correct answer is: FOR block

Question **13**

Correct

Mark 2.00 out of 2.00

Which Python function is used for console output?

Select one:

○ **print**   ✔

○ **return**

○ **for**

○ **from**

Refer to curriculum topic: 3.2.5

The **print** command is used for console output. The command **for** is used for repetition logic, **from** is used for module importing, and **return** is a function definition.

The correct answer is: **print**

Question **14**

Correct

Mark 2.00 out of 2.00

True or False?
Programmers only work on desktop applications.

Select one:

○ true

○ false   ✔

Refer to curriculum topic: 3.1.1

In the past, many programmers worked on desktop applications. The Internet and the IoT, however, have opened up many interesting new areas of work for programmers.

The correct answer is: false

Question **15**

Correct

Mark 2.00 out of 2.00

What is needed for a computer program to communicate with another computer program made from a different vendor?

Select one:

○ API   ✔

○ firmware

○ device driver

○ operating system

Refer to curriculum topic: 3.1.3

An application programming interface (API) is a set of routines and software tools that facilitate communication between computer programs.

The correct answer is: API

Question **16**

Correct

Mark 2.00 out of 2.00

What elements are used to represent different programming structures in Blockly?

Select one:

○ flowcharts

○ colored blocks   ✔

○ programming code pieces

○ colored lines and symbols

Refer to curriculum topic: 3.2.4
Blockly implements visual programming by assigning different programming structures to colored blocks. These blocks also contain slots and spaces to allow programmers to enter values required by the structure. Programming structures can be connected by dragging and attaching the appropriate blocks.

The correct answer is: colored blocks

Question **17**

Correct

Mark 2.00 out of 2.00

Which language is an example of a compiled programming language?

Select one:

○ Python

○ PHP

○ Javascript

○ C   ✔

Refer to curriculum topic: 3.1.2
C is a compiled programming language, whereas Python, PHP, and Javascript are all interpreted languages.

The correct answer is: C

Question **18**

Correct

Mark 2.00 out of 2.00

What is an advantage of an executable program coded with an interpreted language compared with a compiled language?

Select one:

○ It runs faster.

○ It stores as binary format.

◉ It is easier to maintain and troubleshoot.   ✔

○ It does not rely on another program in order to execute.

Refer to curriculum topic: 3.1.2
A program coded with an interpreted language stays in human-readable text, which makes it easy to maintain and troubleshoot. However, it relies on another program, called the interpreter, to parse and execute the code. Because it requires interpretation during its execution, it runs slower than the same program coded by a compiled language.

The correct answer is: It is easier to maintain and troubleshoot.

Question **19**

Correct

Mark 2.00 out of 2.00

Which statement describes Blockly?

Select one:

○ It is a compiled language.

○ It is a specific Linux distribution.

○ It is graphic editing software for web design.

◉ It is a JavaScript based library for implementing visual programming.   ✔

Refer to curriculum topic: 3.2.4
Blockly is a JavaScript based library for implementing visual programming. By using a number of block types, it allows a user to create a program without entering any lines of code. It is not an example of a compiled language, nor a Linux distribution. Although it provides visual programming features, it is not considered a graphic editing software package.

The correct answer is: It is a JavaScript based library for implementing visual programming.

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