Practice Test 2 (Not Assessed)

Started: Jan 4 at 16:59

Quiz Instructions

Course Code and Name: COSC2500 Introduction to Computer Systems

Assessment Due Date: none

Length: 90 minutes

Type: Individual

Feedback Mode: On Canvas

Late Work: None

Learning Objectives Assessed

- Describe some of the fundamental hardware building blocks of computer systems and some basic algorithms by which they are used.
- Demonstrate understanding of number systems, such as binary, octal, decimal and hexadecimal.
- Use Boolean algebra to model basic algorithms in hardware using logic gates such as binary addition/multiplication, template pattern matching, stream encryption, data multiplexing.
- Describe fundamentals of computer architecture and organisation, operating systems, and system integration and deployment.
- Critically review and (re-)design existing computer system specifications for meeting stated performance criteria.
- Be able to use small IoT devices to capture sensory information and interact with other hardware.
- Describe the layered networking model, basic networking protocols and ways in which data is encoded

Ready for Life and Work

- Enabling Knowledge
- Critical Analysis
- Problem Solving

Assessment Details

This Practice Test requires you to answer questions as a revision towards your In-Class Test 2. The requirements are detailed in each question.

Support Resources

This assessment requires that you meet RMIT's expectations for academic integrity. More information and advice on how to avoid plagiarism are available in the Getting Started module. Open **the academic integrity page (https://www.rmit.edu.au/students/my-course/assessment-results/academic-integrity)**

Submission Instruction

This assessment is a **Practice In-Class Test 2** on Canvas, therefore you can do it as many times as you like. The solutions to the questions will be uploaded before your actual In-Class Test 2. And will be discussed by your tutor during the tutorials.

In-Class Practice Test 2 Instructions

1. This Practice Online Test 2 uses the Quizzes function in Canvas. Use the Insert Menu for Equation, Table, Document, or Image.
2. Though the time is 95 minutes, the test is only good for 90 minutes. Once you click start on Canvas it will automatically start the timer.
3. The 5 minutes allowance is for you to submit or upload your work (if any). Manage your time properly.
4. Answer all questions provided. You must enter all your work/answers **only in Canvas**.
5. You must click the Submit button once you finish. Take note the Canvas will automatically lock after 90 minutes.
6. Whatever your answers are will automatically be saved even if you have not submitted your answers.
7. The total mark is 50, which will be converted to 25%.

Question 1	**6 pts**

Micro:bit

There are 25 edge connector strips/pins on a micro:bit. Of the 25 strips/pins, describe and discuss the different pins and their functions.

> brain of a whole computer system that
> executes programs.
> • The microprocessor is an advancement in IC
> technologies that allow processors to be
> implemented in a single chip.
> • All CPUs nowadays are microprocessors, but not all microprocessors are
> CPUs.

• Graphics Processing Unit (GPU), NIC card and
Sound Card are also contained in
microprocessors.
• Microcontroller = Microprocessor with Memory
and I/O supporting components on single chip

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Question 2   6 pts

Guest Lecture

According to the Guest Lecturer, Vietnam is ideal for the IT industry to operate and
thrive. He identified the variables that make it ideal and provided several examples.
List three variables and back it up with examples.

• To classify data as big data, use the following Vs (3, 5, 7):
Volume: What is the volume of the data? Terabytes and
Petabytes of data per day are the norms
Velocity: rapidly increasing speed at which new data is
generated and the need for that data to be analysed, used
Variety: the diversity of data. Data is not only text, but music,
videos, sensory data, tactical data and mostly unstructured
Veracity: refers to the quality and accuracy of data.
Gathered data could have missing pieces, may be inaccurate
Value: refers to the value that big data can provide, and it
relates directly to what organizations can do with that data.

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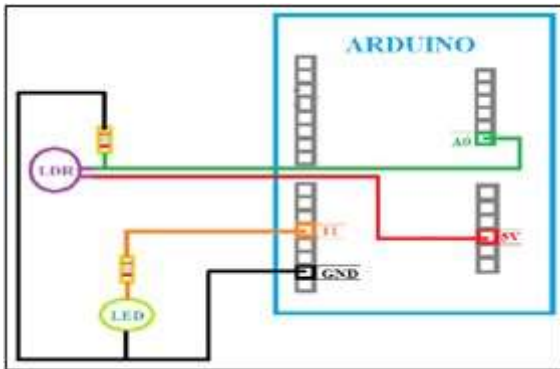
Question 3   7 pts

Arduino

In this project, the LED lights is turned on when we cover the LDR sensor and is turned off when the LDR sensor is exposed to light. The circuit is as follows:

Write the code for this project.

things and people – all of which collect and
share data about the way they are used and
about the environment around them.
That includes an extraordinary number of objects of all
shapes and sizes: smart microwaves, self-driving cars,
fitness devices, and everything, including the WC2022 balls
In a nutshell, the Internet of Things is the
concept of connecting any device (so long as it
has an on/off switch connection) to the Internet
and to other connected devices.
Internet of Things (IoT) – How does it Work?
Devices and objects with built in sensors are connected to
an Internet of Things platform, which integrates data from the

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Question 4   7 pts

Raspberry Pi

What are NOOBS and Raspbian OS? Is there any difference between the two? Explain.

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pins, allowing you to control electronic components for physical computing and explore the Internet of Things (IoT).

What can you do with Raspberry Pi?

• Some people buy a Raspberry Pi to learn to code and learn programming.

• People who can already code use the Pi to learn to code electronics for physical projects.

• The Raspberry Pi can open opportunities for you to create your own home automation projects, which is popular among people in the open-source community because it puts you in control, rather than using a proprietary closed system.

• Raspberry Pi can be used as a normal computer. Latest Pi (4) are good enough.

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Question 5   8 pts

Network Model

In the OSI model of network transmission, there are 7 layers namely in order: Application, Presentation, Session, Transport, Network, Datalink, and Physical. Describe the process of layering (data go through each layer) with an example application.

• Divides network communication into smaller parts to make it easier to understand

~~parts to make it easier to understand.~~

- A layered design provides a clear interface so that only the most important information is communicated across levels.
- One layer's format to be changed by another.

The ISO OSI Reference Network Model

- To address the problem of network incompatibility, the International Organization for Standardization (ISO) researched existing networking models.
- Digital Equipment Corporation net (DECnet), Systems Network Architecture (SNA), and TCP/IP ... set of rules for all networks.
- Using this, the ISO created a network model that helps vendors

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Question 6   8 pts

Network Access

What is the role of Quality of Service (QoS) in a converged network? How QoS is notable internet trends as intelligent?

~~Evaluate, understand, and use the Windows Operating~~
- Evaluate, understand, and use the Mac Operating System
- Evaluate, understand, and use Linux Operating System
- Use Linux commands at Command Line Interface.

What is an Operating System?
- A Computer System = Hardware + Software
- Software: Application Software (MS Office) and System Software (Windows Operating System)
- OS mostly used by the computer, a little by us ...
- An Operating System is a system software that acts as an intermediary/interface between a user of a computer and the computer hardware.
- Why do we need the interface?

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Question 7   8 pts

Operating System

Describe and discuss the similarities and differences between the Windows, Mac and Linux Operating Systems.

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- Blocked:
  o that is waiting for some event to occur before it can continue executing. Process do not require the services of the CPU since their execution cannot proceed until the blocking event completes
- Ready:
  o that is not allocated to a CPU but it is ready to run.

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Process State (2)

- Running:
  o That is executing on a CPU. If the system has n CPUs, at most n processes may be in the running state.

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