Exploring Computer Technology

Practice Test (Fri. 10 November 2017)

Name:

1 Questions (30%)

Answer the questions below either by filling the blank or selecting the right option:

1. Alice wants to sent an Email to Bob. Once she finishes writing it, she press the "Send" button. What happens next? How is the message delivered to Bob? Choose the answer that best describes how the internet works.

   (a) The email message is printed on paper and Alice brings it to Canada Post, who then makes sure it is delivered to Bob.

   (b) The message is translated into 0's and 1's and these are all sent at once through wifi and cables to Bob's computer.

   (c) The message is divided into many little packets of 0's and 1's; each packet gets a timestamp and a number; then each packet is sent to Bob. Most often than not, each packet follows different routes along internet computers before reaching Bob.

   (d) The message is divided into packets and they all are sent along one and the same path of computers in the internet before reaching Bob.

2. What is the 2-letter acronym that denotes the internet address of a computer?

3. Which of the following is true? When a packet reaches a router

   (a) The router knows the location of all computers in the internet and can send the packet directly to its recipient

   (b) The router knows the location of only a few computers in the internet. If the recipient of the packet is not amongst them, it sends it to another router that may know it.

4. Although we all use mostly wireless access to connect to the internet, once our packets reach the first routerAlice lives in Canada and has a friend Bob who is currently in Germany. She just pressed the "Send" button for sending an email to Bob, when suddenly, all the cables between North

America and Europe bbreak, however, the cables between the west coast and asia are working without problems. Is it possible for the email to still reach Bob in Germany?

5. Around 1945 a reknown mathematician, John von Neumann, described what it is now known as the *von Neumann architecture*, which summarizes the essence of what constitutes a computer. Sketch what we would say is the gist of the von Neumann architecture:

6. The T _ _ i _ _ M _ _ _ _ _ e (6 & 7 letters, respectively) plays the role of the _processing_ unit in the von Neumann architecture.

7. Sketch the basic idea of what a Turing Machine is.6.

8. List at least two **different** *input devices* for a computer.

2 Problems (70%)

Remember to label each input and output lines and to use these labels correctly on the truth tables.

1. Draw the diagram of an AND gate and write down its truth table

2. Draw the diagram of an OR gate and write down its truth table

3. Draw the diagram of a NOT gate and write down its truth table

4. See figure 1. What will be the value of z (the output in this logic circuit)?

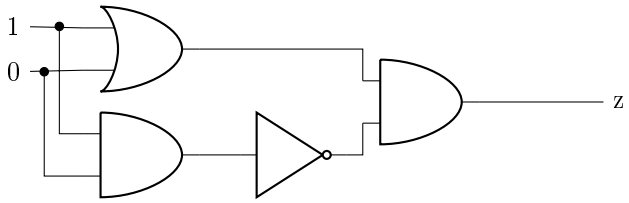


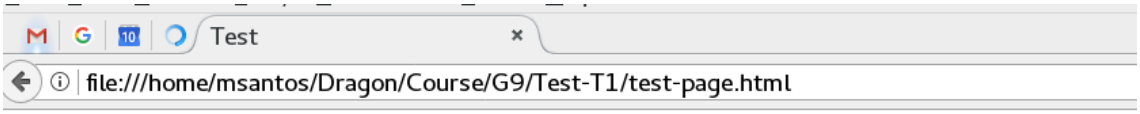
Figure 1: Logic circuit 1

5. What follows are the transition rules of a Turing Machine. Write down the computations steps when this machines starts at state and input given by the first line below:

$$
\begin{array}{lcl}
(A,1) & \longrightarrow & (1,C,\rightarrow) \\
(C,0) & \longrightarrow & (1,A,\rightarrow) \\
(C,1) & \longrightarrow & (0,A,\leftarrow)
\end{array}
$$

A	$1.0\,1\,0\,1\,1\,E$

6. Write the HTML code that would render a page like in the image.



The Test on HTML

This is my first course on **HTML**

HTML is what's called a *Markup* language, not a *programming* language.