CSC 121: Computers and Scientific Thinking
Sample Test 1

TRUE/FALSE (4 points)

_____ The World Wide Web was developed in the early 1970's, shortly after the development of the Internet.

_____ A *multi-core* processor is able to execute multiple instructions simultaneously, and thus can complete many tasks faster than a single-core processor.

_____ The three main components of the *von Neumann architecture* are the hardware, software, and operating system.

_____ Since computer programs can be difficult to write and debug, they are referred to as *hardware*.
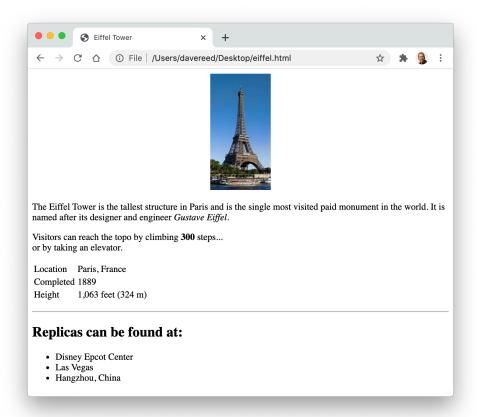
MULTIPLE CHOICE (6 points)

I. Which of the following statements is FALSE concerning the transmission of messages over the Internet?
   A. Each computer on the Internet is assigned an IP address.
   B. The message is broken into packets using the Transmission Control Protocol (TCP).
   C. Packets are labeled with source and destination addresses using the Internet Protocol (IP).
   D. Each packet follows the same preset path from the source computer to its destination.

II. Which of the following is NOT a task carried out by an operating system?
   A. organizing and managing the computer's file structure
   B. interpreting HTML tags and displaying content accordingly
   C. controlling how data and instructions are loaded from memory and accessed by the CPU
   D. providing an interface of the user to interact with the computer and its software

III. Which of the following best describes the role of a Web crawler, or spider?
   A. They scan Web pages for viruses and other malevolent software.
   B. They traverse the Web, cataloging Web pages for use by Web searches engines.
   C. They serve as intermediaries between Web browsers and servers, retrieving and displaying requested pages.
   D. They store cookies on user computers in order to remember data between Web site visits.

SHORT ANSWER (20 points)

A. Modern computers integrate several *different types of memory*, such as cache, RAM, hard disk, and flash drive. Why are different types of memory used, as opposed to the exclusive use of a particular technology? What would be the drawbacks, for example, of using only cache memory, or only hard disk?

B. Paul Baran proposed two groundbreaking design ideas for the structure and behavior of the ARPANet. Describe these design ideas and the benefits they provide.

C. The two main pieces of software that make the World Wide Web work are the *Web browser* and the *Web server*. Describe the roles of these two programs in enabling users to surf the Web.   What is HTTP and how is it involved in the process?

D. In class, we discussed three significant ways in which computer technology has positively impacted biology. Describe two of those ways and provide an example of each.

QUESTION 5: Static Web Pages (20 points)

Consider the following Web page and the *incomplete* HTML document below that is intended to produce it.


```
 1   <!doctype html>
 2   <!-- eiffel.html      Sample page for Test 1 -->
 3   <!-- ======================================= -->
 4 ▼ <html>
 5 ▼   <head>
 6        <title>Eiffel Tower</title>
 7     </head>
 8 ▼   <body>
 9 ▼     <div style="text-align:center">
10        <img src="eiffel.jpg" alt="Photo of the Eiffel Tower" height=200>
11        </div>
12
13 ▼     <p>The Eiffel Tower is the tallest structure in Paris and is the
14        single most visited paid monument in the world.
15        It is named after its designer and engineer <i>Gustave Eiffel</i>.
16        </p>
17
18 ▼     <table >
19          <tr><td>Location </td> <td>Paris, France </td></tr>
20          <tr><td>Completed </td> <td>1889 </td></tr>
21          <tr><td>Height </td> <td>1,063 feet (324 m) </td></tr>
22        </table>
23     </body>
24   </html>
```

A. What is the purpose of the lines numbered 1 and 2 the HTML document, i.e., the lines starting with `<!--` and ending with `-->` ? Would removing these two lines change the way that the page is displayed in the browser?

B. Currently, the text "Eiffel Tower" appears between the tags `<title>` and `</title>` on line 6. If that text were changed to "Tour Eiffel," would that affect the contents of the page? If so, how? If not, what would be affected?

B. What is the purpose of the HEIGHT attribute in the IMG element? Would the image still appear in the page if this attribute were removed? Would its appearance change?

D. In the `eiffel.html` document, the text and tags that produce the 2nd paragraph (beginning "Visitors can reach…") are missing. Provide the missing text and tags below to produce the paragraph shown in the page. Note that the number 300 appears in bold and there is a line break after the "…" Specify the line number where your addition should be inserted into the document.

E. What additions/modifications would need to be made to the table so that lines would appear between the rows and columns?

F. The contents of the page below the table do not have corresponding elements in the HTML document. Write the text and tags below that will produce the page contents below the table. Specify the line number where your addition should be inserted into the document.