

## Assignment 1: Computer Applications in CEE

Date Due: January 31, 2022

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### Problem 1

One of the best web sites to learn about the development of computers is the History of Computers Museum (<http://www.computerhistory.org/revolution/timeline>). Look at the Museum timeline and briefly answer the following questions:

- a) In a sentence explain the history behind the term “ computer bug” to represent errors in a computer program.
- b) The Complex Number Calculator (CNC) was introduced in 1940. Briefly state the importance of this system.
- c) Name the predecessor of the Internet developed by the Advanced Research Projects Agency (ARPA).
- d) The IBM 2314 direct access storage facility was introduced in 1965 to support mainframe computers like the IBM 360. Compare the typical storage capacity of the IBM 2314 versus the storage available on your hard drive today.
- e) Name the first successful video game console launched by Atari. Name the year.
- f) Name the first computer aided system used by General Motors in the early 1960s.
- g) JPEG is one of the most popular file formats worldwide. State when it was developed and what is the meaning of the word JPEG.
- h) Explain the purpose of a Graphics Processing Unit (GPU). Name a popular brand of GPUs today.
- i) On January 24, 1984 Apple launches the first Macintosh computer. Explain the significance of this computer in terms of its technology and price.
- j) Java is one of the most popular languages today. Name the company and the developers of this important language.

### Problem 2

For your own personal computer find the following:

- a) Number and model of CPU processor used
- b) CPU clock speed
- c) Computer Random Access Memory (RAM) size
- d) Graphics processing unit if any (GPU)
- e) How many bytes does your computer hard drive has to store information?

### Problem 3

Use the Car Data file posted on Week 1 of our syllabus web page to answer the following questions.

- a) Import the data into an Excel file.
- b) Concatenate the car name with its engine power and create a new column.
- c) Create a new column in the spreadsheet to assign the **engine category** for each car according to the engine horsepower. For this exercise use a VLOOKUP function in Excel to classify the cars according to the following table. IN your answer, show me an example of the Excel formula(s).

Engine Horsepower (HP)	Engine Category
0-75	A

Engine Horsepower (HP)	Engine Category
76-120	B
121-185	C
>186	D

- d) Count how many cars belong to each engine power class using the Excel COUNTIF or a variation of commands needed.
- e) Use Excel conditional formatting to color code the values based on car horsepower. Assign red to Engine Category D, purple to Category C, Blue to Category B and Green to Category A.
- f) Repeat the classification problem completed in Part (c) but this time use a series of IF statements instead of the VLOOKUP function. Comment on the complexity and ease of use of both approaches.

#### Problem 4

Your construction company requests a 10 year loan to purchase five CAT 330D Crawler Excavators. The new equipment costs \$210,000 per excavator.



- a) The bank offers loan at 5.85% per year over 10 years. Find the monthly payments to pay back the loan.
- b) Estimate the amount of the load paid as interest to the bank.