

Fall 2020 COP 2930 Midterm Exam Part A Solution

Date: 10/8/2020
Time Given: 10:30 am
Time Due: 11:00 am
Late Due Time: 11:10 am

1) (12 pts) Please provide 3 different ways to produce the following output:

```
hello
bye
```

Each method should have one or two print commands. (Hint: make use of end, sep and escape sequences.)

Sample Solution

```
# Question 1 - method 1
print("hello")
print("bye")

# Question 1 - method 2
print("hello\nbye")

# Question 1 - method 3
print("hello", "bye", sep = "\n")
```

All three methods express printing the newline character after hello in different ways.

Grading: 4 pts for each method, there needs to be at least one difference between methods to count. Take off 1-3pts if what is printed isn't correct.

2) (12 pts) The value added tax in France is 20%. This means when you buy an item for which the tax applies, an extra 20% is added to the purchase price. Write a program that reads in the cost of an item (before tax) in Euro as a floating point number and then prints out the total cost with the value added tax added. For example, if the user enters 5.20, your program should print out 6.24, since 1.04 is 20% of 5.20.

Sample Solution

```
price = float(input("How much is your item w/o tax?\n"))
print("With tax, you will pay", price*1.2, "Euros.")
```

Grading: 5 pts input - 1 pt LHS, 1 pt =, 1 pt float, 1 pt input, 1 pt prompt
4 pts calculation - however price is multiplied by 1.2
3 pts output - 3 pts for printing out the result, no words necessary

3) (10 pts) The earth has a circumference of 25,000 miles, roughly. Imagine superman flying X miles, following the path of the equator, starting at Quito, Ecuador, flying east (towards Africa from South America). What do the expressions $x//25000$ and $x%25000$, represent, respectively, in terms of Superman's whole flight?

Sample Solution

The expression $x//25000$ represents the number of times Superman fully flew around the earth. The expression $x%25000$ represents the number of miles east of Quito he'll end up after he's done flying.

Grading: 5 pts for each answer, probably hard to give partial credit, but if something seems to merit partial credit, assign it.

4) (15 pts) For essential items such as bread and cheese, France does not charge a value added tax. Write a new program that asks the user to enter the original price of an item, AND enter if the item is essential or not. If the user answers "yes", then no value added tax (20%) is added to the final cost. If the user answers anything but "yes", the value added tax should be applied. In both cases, print out the final cost of the item.

Sample Solution

```
price = float(input("How much is your item w/o tax?\n"))
essential = input("Is the item essential?\n")

if essential == "yes":
    print("The total cost is", price, "Euros.")
else:
    print("With tax, you will pay", price*1.2, "Euros.")
```

Grading: 5 pts first input 3 pts second input, if-else set up 3 pts, 2 pts for no tax formula, 2 pts for tax formula

5) (1 pt) What fruit flavor is added to the cereal, Apple Jacks? **Apple Jacks (1 pt Give to all)**