

CPSC 217 Final exam review: winter 2008

Written questions

1. Write a function 'swap' that takes two numbers as parameters. This function is to swap what's currently stored in the numbers and return the two numbers back to its caller.

```
def swap (num1, num2):
```

```
    temp = num1  
    num1 = num2  
    num2 = temp
```

```
    return num1, num2
```

```
# MAIN
```

```
num1 = 123
```

```
num2 = 321
```

```
num1, num2 = swap (num1, num2)
```

2. For this question you are to refer to the program (which is a simple simulation) shown below.

```
class Country:
```

```
    name = "default country name"
```

```
    population = -1
```

```
can = Country ()
```

Part I: Setting the fields: Set name field of the 'can' variable to "Canada" and the population to 30000000 (30 million)

```
can.name = "Canada"
```

```
can.population = 30000000
```

Part II: Displaying the fields: Display all on one line the fields of the 'can' variable.

```
print can.name, can.population
```

3. What is the output of the following program?

```
num1 = 1

def fun1 ():
    print "2:", num1, num2

def fun2 (num1, num2):
    print "3:", num1, num2

def fun3 ():
    num1 = 10
    num2 = 20
    print "5:", num1, num2

def fun4 (num1, num2):
    num1 = num1 * 2
    num2 = num2 * 2
    print "7:", num1, num2

def fun5 ():
    global num2
    num1 = 7
    num2 = 13
    print "9:", num1, num2

num2 = 2
print "1:", num1, num2
fun1 ()
fun2 (num1, num2)
print "4:", num1, num2
fun3 ()
print "6:", num1, num2
fun4 (num1, num2)
print "8:", num1, num2
fun5 ()
print "10:", num1, num2
```

<< **Write your answer here** >>

- 1: 1 2**
- 2: 1 2**
- 3: 1 2**
- 4: 1 2**
- 5: 10 20**
- 6: 1 2**
- 7: 2 4**
- 8: 1 2**
- 9: 7 13**
- 10: 1 13**

4. Write a function that provides an alternative movement algorithm for the EPA agents from the Simpsons game that you wrote for Assignment 7. In this version of the game the agents will 'chase' Homer (always try to move towards him). This function will be called six times (once for each EPA agent) in order to determine what the new (row, column) coordinates for that agent should be. It will then return the updated row, column value back to its caller.

All this function has to do is to determine for each agent (one at a time) the new (row, column value) needed so that the agent appears to move towards Homer. You can assume that other necessary checks (e.g., is the destination in bounds, is the destination empty, what to do if there is an obstacle) will be written elsewhere in the program.

```
# The current coordinates of the agent to be moved are stored in (agentRow, agentColumn)
# The current coordinates of Homer are stored in (homerRow, homerColumn)
def chase (agentRow, agentColumn, homerRow, homerColumn):
```

```
    if (homerRow < agentRow):
        agentRow = agentRow - 1
    elif (homerRow > agentRow):
        agentRow = agentRow + 1

    if (homerColumn < agentColumn):
        agentColumn = agentColumn - 1
    elif (homerColumn > agentColumn):
        agentColumn = agentColumn + 1
```

```
    return agentRow, agentColumn
```

Multiple choice questions

1. Assuming that the file has been correctly opened. Which of the following is the correct way to *read an entire file*?

```
filename = open ("data.txt", "r")
```

- a. print filename
- b. filename.read
- c. filename.read ()
- d. filename.close ()
- e. for temp in filename:

Answer: E

2. In terms of the section on computer history which of the following statements is/are true?

- a. The explosive growth of the Internet resulted in the widespread use of microcomputers.
- b. IBM started manufacturing microcomputers long before Apple entered the market and thus gained a competitive foothold.
- c. The first kit-based home computer was the IBM-PC.
- d. IBM's first microcomputer operating system was written by Apple.
- e. None of the above.

Answer: E

JT: Good luck with your finals.