Why did the computer keep sneezing?

It had a virus!

Source: unknown!

Thank you, Lana

CMPT 120

Lecture 16 – Practice Exam 4

In-Class Activity

Course grading scheme on our course website: ***Best 7 in-class exercises out of 10: 1% each, for a total of 7%***

- Our in-class activity #4 -> 1%
  - Write your answer to **the 6 instructions of Q. 10** on Slide 13 on a sheet of paper
  - Write your **lastname**, **firstname** and **student number**
  - At the end of today's class, hand in your sheet of paper in the appropriate pile:
    - **Pile 1** -> if your lastname start with a letter that is between '**A**' and '**L**'
      - **Pile 1** is on your **left-hand side** of the classroom
    - **Pile 2** -> if your lastname start with a letter that is between '**M**' to letter '**Z**'
      - **Pile 2** is on your **right-hand side** of the classroom

Theory and Understanding

Try to answer the questions **1st without using your computer,** then confirm your answer using IDLE!

Question 1 - Which of the following is true about the **import** statement?

a. It makes random variables.
b. You may need to import the same module multiple times in a file.
c. It loads a module to add functionality to the program.
d. It creates a module with several functions.
e. None of the above.

Question 2 - Which of the following statements is true about **Boolean values** and **Boolean expressions**?

a. Boolean expressions can be combined with **or** and **and**.
b. Boolean expressions are used in conditional statements.
c. Boolean values can be True or False.
d. All of the above.
e. None of the above.

Question 3 - What does it mean to **initialize a variable**?

a. Set the variable to 0.
b. Set the variable to 1.
c. Set the variable to a number.
d. Set the variable to a string.
e. None of the above.

Question 4 - What is an **algorithm**? Select the most specific answer.

a. Comments in a Python program.
b. A sequence of steps to solve a problem.
c. The input and output of a Python program.
d. A programming language.
e. None of the above.

Question 5

What does this syntactically correct code fragment output?

```
num_pizzas = 2
num_pop = 0
for i in range(num_pizzas):
    num_pop += 10
if num_pop > num_pizzas:
    num_pizzas += 1
print(F"Your order: {num_pizzas} pizza(s), {num_pop} pop.")
```

a. `Your order: 20 pizza(s), 2 pop.`
b. `Your order: 2 pizza(s), 20 pop.`
c. `Your order: 3 pizza(s), 20 pop.`
d. `Your order: 3 pizza(s), 10 pop.`
e. None of the above.

Question 6

What does this syntactically correct code fragment output?

```
ratings = [10, 10, 8, 4, 7]
best = 0
for rating in ratings:
  if rating > best:
    best = rating

if best > 10:
  print("Error!")
else:
  print(best)
```

a. 10
b. 8
c. Error!
d. best
e. None of the above.

Question 7

Do these two syntactically correct Python code fragments produce the same result?

Answer: Yes, and they both print C

```
grade = 78

if grade < 60 :
  print("F")
else :
  if grade < 70 :
    print("D")
  else :
    if grade < 80 :
      print("C")
    else :
      if grade < 90 :
        print("B")
      else :
        print("A")
```

```
grade = 78

if grade < 60 :
  print("F")
elif grade < 70 :
  print("D")
elif grade < 80 :
  print("C")
elif grade < 90 :
  print("B")
else :
  print("A")
```

Question 8

Do these two syntactically correct Python code fragments produce the same result?

Answer: No, the one on the right prints C

B

```
grade = 78

if grade < 60 :
  print("F")
elif grade < 70 :
  print("D")
elif grade < 80 :
  print("C")
elif grade < 90 :
  print("B")
else :
  print("A")
```

```
grade = 78

if grade < 60 :
  print("F")
if grade < 70 :
  print("D")
if grade < 80 :
  print("C")
if grade < 90 :
  print("B")
else :
  print("A")
```

Coding

Try to solve the problem (i.e., write your Python program) **1st on a piece of paper without using your computer**!

Question 9

- **Problem Statement:**
  - Write a **Palindrome** function that returns True if the given word is a palindrome and False it the given word is not a palindrome.

  - **Requirements:**
    - You cannot use any of the string methods that would reverse a string in one function call.
    - But you can index and slice your strings and you can use `len(…)`.

Question 9 – Possible Solution

```
def palindrome(aWord):
    """Returns True if 'aWord' is a palindrome and False it is not."""

    # The idea of this algorihtm is:
    # Imagine we are folding aWord in half and checking
    # whether each pair of matching letters are identical
    # If so, we have a palindrome

    # Get the positive index of the last (rightmost) letter of aWord
    reverseIndex = len(aWord)-1

    # Let's compare each letter of the leftmost half of aWord with
    # its matching counterpart letter in the rightmost half of aWord
    for anIndex in range(0,len(aWord)//2):

        # If the letters in the current pair are not identical
        # then aWord is not a palindrome
        if aWord[anIndex] != aWord[reverseIndex]:
            return False

        # Go to the next pair of letters
        reverseIndex -= 1

    # If we reach this point, aWord is a palindrome
    return True
```

Question 10 – Tic Tac Toe

- **Problem Statement:**
  - Write a **Turtle** program that draws a **Tic Tac Toe board** on the Turtle canvas.
  - **Requirements:**
    - Your program must do this by calling our `drawSquare` function:

- Solution: `TicTacToe.py`

Question 10 – cont'd

- **Instructions:**
  1. Have a look at Slide 9 of Lecture 15 on our course web site. You will find a drawing of the Python canvas and its underlying cartesian coordinate system (top right of slide).
     - I find this type of drawing very useful when I need to move the turtle around the canvas. It helped me fix the bug I originally had in this program ☹.
  2. Draw a similar drawing, i.e., draw the Python canvas and its underlying cartesian coordinate system on a piece of paper.
  3. Draw your turtle at the centre of your Python canvas, i.e., at (0,0) (facing east). This is the default starting position of a turtle.
  4. Draw the **Tic Tac Toe board** you want to produce on the Turtle canvas. You can draw the board such that your turtle is at its center or at another location.
     - In order to draw your **Tic Tac Toe board**, you will need to decide the size of your squares.
  5. Then figure out the coordinates at which you need to move your turtle (using `goto()`) so it can start drawing one of the squares of the **Tic Tac Toe board** then call the `drawSquare(…)` function.
  6. Repeat the above step (Step 5.) for all the other 8 squares of your **Tic Tac Toe board**.

Q. 10 - Tic Tac Toe board