Homework 1 – Basic output and computation

Due on Thursday, September 8, 2016 12:00 PM

Instructions: For problems 6-8 write Python scripts (.py files). Use variables where necessary and give meaningful names to variables. All script files should have a comment block at the top. Each Python instruction in the script must be preceded by a comment explaining the instruction. Upload a .pdf file containing your solution along with your .py files. If you solve on paper, please upload a good quality scan using CamScanner/Office Lens/iScanner.

Problem 1. Write a python statement that displays the following text: **[10 points]**

```
“I don’t care,” she said. “What do you think?”
```

Solution

```
print('"I don\'t care," she said. "What do you think?"')
```

or

```
print("\"I don't care,\" she said. \"What do you think?\"")
```

Problem 2. Create two variables to store your first name and last name. Display your full name by referencing those variables. **[10 points]**

Solution

```
first_name = 'John'
last_name = 'Doe'
print(first_name, last_name)
```

Problem 3. What will be the output of the following code? **[10 points]**

```
num = 113
print(‘The value is’, ‘num’)
```

Solution

```
The value is num
```

Problem 4. Given the assignment `x = 97`, what will be the output of each of the following Python statements? **[10 points]**

(a) `print(“x”)`
(b) `print(‘x’)`
(c) `print(x)`
(d) `print(“x + 1”)`
(e) `print(‘x’ + 1)`

Solution

(a) `x`
(b) `x`

(c) `97`
(d) `x + 1`
(e) `TypeError: Can't convert 'int' object to str implicitly`
This error comes as we are trying to add the string x to the integer 1.

Problem 5. For the given assignment statements, what will be the Python data type of the variables? **[10 points]**

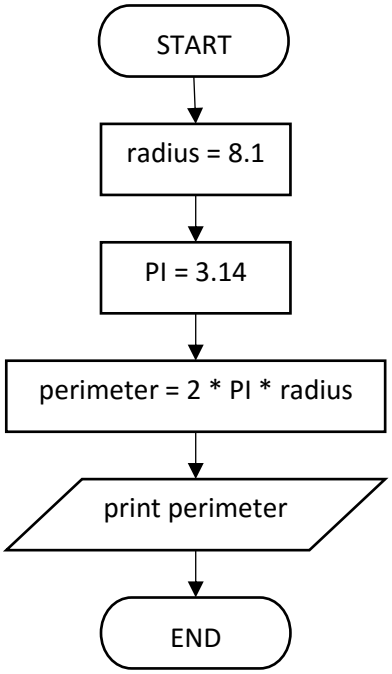
(a) `val1 = 15.00`
(b) `val2 = 9`
(c) `val3 = '7'`
(d) `val4 = 3.7`
(e) `val5 = 'abc'`

Solution

(a) float
(b) int
(c) string
(d) float
(e) string

Problem 6. Draw a flowchart and write a program that displays the perimeter of a circle that has a radius of 8.1 using the formula $perimeter = 2 \times PI \times radius$. Use `PI = 3.14`. **[25 points]**

Solution [script (problem6.py) uploaded separately]

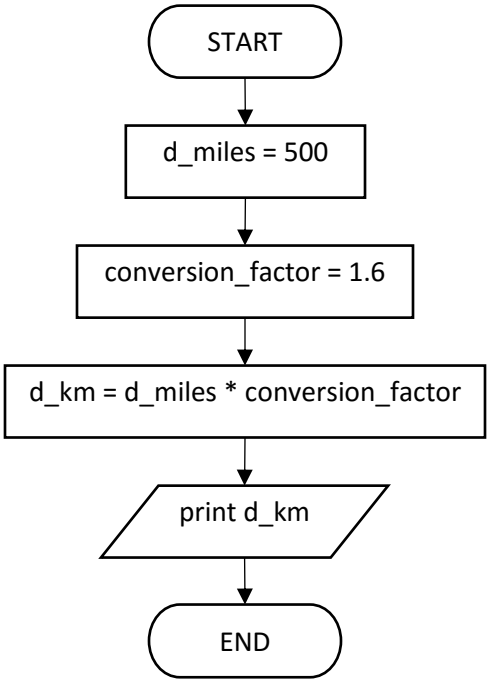



```
#################################################################
# Name: Asmit De                                                #
# ID: aud311                                                    #
# Date: 09/07/2016                                              #
# Assignment: Homework 1, Problem 6                             #
# Description: Program to compute the perimeter of a circle     #
#################################################################

# Assign 8.1 to variable radius
radius = 8.1

# Assign 3.14 to variable PI
PI = 3.14

# Calculate the perimeter
perimeter = 2 * PI * radius

# Display the result
print('Perimeter of the circle is', perimeter)
```

```
================ RESTART: C:/Users/aud311/Desktop/problem6.py
Perimeter of the circle is 50.868
>>>
```

Problem 7. The distance between two cities is 500 miles. Draw a flowchart and write a program to display the distance in kilometers. Assume 1 mile = 1.6 kilometers. **[25 points]**

Solution [script (problem7.py) uploaded separately]




```
############################################################
# Name: Asmit De                                           #
# ID: aud311                                               #
# Date: 09/07/2016                                         #
# Assignment: Homework 1, Problem 7                        #
# Description: Program to convert miles to kilometers      #
############################################################

# Assign 500 to variable d_miles
d_miles = 500

# Assign 1.6 to variable conversion_factor
conversion_factor = 1.6

# Calculate the distance in kilometers
d_km = d_miles * conversion_factor

# Display the result
print('Distance is equivalent to', d_km, 'km')
```

```
================ RESTART: C:/Users/aud311/Desktop/problem7.py
Distance is equivalent to 800.0 km
>>>
```

Problem 8 (bonus). Write a program to compute the surface area and volume of a cylinder. The program should prompt the user to input the radius and length of the cylinder, and should output the surface area and volume based on the formulas $area = PI \times radius \times radius$ and $volume = area \times length$. Use `PI = 3.14`. **[20 points]**

Solution [script (problem8.py) uploaded separately]

```
################################################################################
# Name: Asmit De                                                               #
# ID: aud311                                                                   #
# Date: 09/07/2016                                                             #
# Assignment: Homework 1, Problem 8                                            #
# Description: Program to compute surface area and volume of a cylinder        #
################################################################################

# Input the radius
radius = float(input('Enter the radius of the cylinder: '))

# Input the length
length = float(input('Enter the length of the cylinder: '))

# Set the value of PI to 3.14
PI = 3.14

# Calculate the area
area = PI * radius * radius

# Calculate the volume
volume = area * length

# Display the result
print('Area =', area, '\nVolume =', volume)
```

```
================ RESTART: C:\Users\aud311\Desktop\problem8.py
Enter the radius of the cylinder: 5
Enter the length of the cylinder: 20
Area = 78.5
Volume = 1570.0
>>>
```