COL100: Lab 2

January 8, 2017

Part 1: Programming with Python

Open a Python shell in terminal. Then, try out the following:

1. **Arithmetic and Boolean Operations:** +, -, *, /, %, **, |, ^
2. **Variable Assignment:** (example a=2)
3. **Types:** int, float, char, string
4. **Type Inference:** type(var)
5. **Strings:** "Hello World"
6. **Lists:** [1,2,3], ["Mon","Tue","Wed"], [1, "Mon", 3.0]
7. **Tuples:** (1,2), ("Mon",1)
8. **Comment** a line using # symbol.
9. **Delete** a varible using del: (example del a)

Reference: `https://www.tutorialspoint.com/python3/python_basic_operators.htm`

Part2: Programming Questions

1. Write a program to perform the following operations on two numbers:
   a) addition b) subtraction c) multiplication d) division e) modulus. Your program should prompt the user to enter the two numbers.
2. Write a program to calculate and print the simple interest. You should accept principal, time and rate of interest from the user.
3. Write a program to print your details in the format given below.
   Name: xyz
   Entry Number: 2016CSxxxxx
   Branch: Compter Science and Engineering
   Group Number: zz
   You should not take any input from the user. To get the output above, simply use 4 print statements.
4. Write a program to add the details of the previous question in a list. Input the details from the user. Finally print the list.

Solutions

```
# Store input numbers
num1 = input('Enter first number: ')
num2 = input('Enter second number: ')

# Add two numbers
sum = float(num1) + float(num2)
diff = float(num1) - float(num2)
prod = float(num1) * float(num2)
div = float(num1) / float(num2)
modu = num1 % num2

# Display the results
print('The sum of {0} and {1} is {2}'.format(num1, num2, sum))
print('The difference of {0} and {1} is {2}'.format(num1, num2, diff))
print('The product of {0} and {1} is {2}'.format(num1, num2, prod))
print('The division of {0} and {1} results in {2}'.format(num1, num2, div))
print('The modulus of {0} and {1} is {2}'.format(num1, num2, modu))
```

```
rate = input('Enter rate percentage ')
principal = input('Enter the principal amount ')
time = input('Enter number of years ')
simple_Interest = ( float(principal) * rate * time ) / 100
print('Simple Interest = %f ' %simple_Interest)
```

```
print("Name: John")
print("Entry Number: 2015ANZ8222")
print("Branch: Computer Science and Engineering")
print("Group Number: 10")
```

```
details_list = []
name = input('Enter your name: ')
details_list.append(name)
entry_no = input('Enter your entry number: ')
details_list.append(entry_no)
branch = input('Enter your branch: ')
details_list.append(branch)
group = input('Enter your group number: ')
details_list.append(group)

print "Details:"
print "Name:", details_list[0]
print "Entry Number:", details_list[1]
print "Branch:", details_list[2]
print "Group Number:", details_list[3]
```

Part3: Practice Questions

1. Write a program to calculate the hypotenuse of a right angled triangle, given its base and height. Your program should prompt the user to enter the base and the height of the triangle.

2. Write a program to print the sum of first 100 terms of a given arithmetic progression. Your program should prompt the user to input the first two terms of an arithmetic progression. Then in return your program should print the sum of the first 100 terms of the sequence. [Hint: Let the first two numbers of the sequence are a and b, the difference between a and b is d and n is 100. Sum of the first 100 terms, S = (n(2a + (n-1)d)/2)]

3. Write a program to separate the digits of a three digit number and print them in separate lines. For example, 325 will be printed as:
   3
   2
   5

4. Write a program to compute the SGPA. The program should prompt the user to input grades (out of 10) in 5 subjects, and also prompt to input corresponding credits (1-4) of each subject. The program should then compute and print the SGPA.

5. Write a single program to compute the area of the following: a) Circle: Input the radius and print the area. b) Square: Input the length of a side and print the area. c) Rectangle: Input the length and breadth and print the area. d) Parallelogram: Input the base and height, and print the area. e) Trapezium: Input the length of the parallel sides, and the perpendicular distance between them and print the area.