APEEJAY STYA UNIVERSITY

Assignment 3

Course Code: ETCS 212   **Course Title: Open Source Systems**
Date: 18 March, 2017   **Marks: 5**

Q1- Write a Python function, square, that takes in one number and returns the square of that number.

Q2- Write a Python function, *evalQuadratic(a, b, c, x),* that returns the value of the quadratic $a \cdot x2+b \cdot x+c$. This function takes in four numbers and returns a single number.

Q3- Write a Python function, *clip(lo, x, hi)* that returns lo if x is less than lo; hi if x is greater than hi; and x otherwise. For this problem, you can assume that lo < hi. Don't use any conditional statements for this problem. Instead, use the built in Python functions min and max

Q4- Write a Python function, *odd*, that takes in one number and returns True when the number is odd and False otherwise. You should use the % (mod) operator, not if. This function takes in one number and returns a boolean.

Q5- Define a function *isVowel(char)* that returns True if char is a vowel ('a', 'e', 'i', 'o', or 'u'), and False otherwise. You can assume that char is a single letter of any case (ie, 'A' and 'a' are both valid). Do not use the keyword *in*. Your function should take in a single string and return a boolean.

Q6- Write a program that counts up the number of vowels contained in the string s. Valid vowels are: 'a', 'e', 'i', 'o', and 'u'. For example, if s = 'azcbobobegghakl', your program should print:

Number of vowels: 5

Q7- Assume s is a string of lower case characters. Write a program that prints the number of times the string 'bob' occurs in s. For example, if s = 'azcbobobegghakl', then your program should print

Number of times bob occurs is: 2

Q8- Write a program that prints the longest substring of s in which the letters occur in alphabetical order. For example, if s = 'azcbobobegghakl', then your program should print

Longest substring in alphabetical order is: beggh
In the case of ties, print the first substring. For example, if s = 'abcbcd', then your program should print
Longest substring in alphabetical order is: abc

Q9- Write a program to calculate the credit card balance after one year if a person only pays the minimum monthly payment required by the credit card company each month.

The following variables contain values as described below:

1. balance - the outstanding balance on the credit card
2. annualInterestRate - annual interest rate as a decimal
3. monthlyPaymentRate - minimum monthly payment rate as a decimal

For each month, calculate statements on the monthly payment and remaining balance, and print to screen something of the format:

Month: 1
Minimum monthly payment: 96.0
Remaining balance: 4784.0

Be sure to print out no more than two decimal digits of accuracy - so print

Remaining balance: 813.41

instead of

Remaining balance: 813.4141998135

Finally, print out the total amount paid that year and the remaining balance at the end of the year in the format:

Total paid: 96.0
Remaining balance: 4784.0

A summary of the required math is found below:

Monthly interest rate= (Annual interest rate) / 12.0
Minimum monthly payment = (Minimum monthly payment rate) x (Previous balance)
Monthly unpaid balance = (Previous balance) - (Minimum monthly payment)
Updated balance each month = (Monthly unpaid balance) + (Monthly interest rate x Monthly unpaid balance)