

Department of Electrical Engineering

Assignment

Date: 07/05/2020

Course Details

Course Title: Programming Fundamentals Module: 02
Instructor: Sir Muhammad Waqas Total Marks: 20

Student Details

Name: Muhammad Salman Nasir Student ID: 16664

Q1.	(a)	Write a Guess the Word program in Python, The user needs to be able to input letter guesses. A limit should also be set on how many guesses they can use. This means you'll need a way to grab a word to use for guessing, this can be grabbed from a pre-made list. You will also need functions to check if the user has actually inputted a single letter, to check if the inputted letter is in the hidden word (and if it is, how many times it appears), to print letters, and a counter variable to limit guesses.	Marks 5 CLO 2
Q2.	(a)	Write a Password Generator program in Python, which generates a random password for the user. Ask the user how long they want their password to be (minimum 8 to 15 characters), how many letters, symbols and numbers they want in their password. Password generated MUST have a mix of upper and lowercase letters, as well as numbers and symbols	Marks 5 CLO 1
Q3.	(a)	Write a Message Encryption Decryption program in Python, The user will input any text and your program must encrypt the text by using Base64 or HEX. The text must then be decrypted from the encrypted form to show that the decrypted text is the original form.	Marks 10 CLO 1

Answer No1:

The required Guess the Word program in Python is:

```
# import module for random functions
import random
# List of words for the computer to pick from
words = ("basketball", "football", "hockey", "lacrosse", "baseball")
# Word to be guessed; picked at random
word = random.choice(words)
letters_guessed = []
print "Guess the sport!"
print "You get to give five letters."
print "There are %s letters in the word." % (len(word))
guesses = 5
while guesses != 0:
    letter = raw_input("Enter a letter: ")
    if letter in letters_guessed:
        print "You already guessed that letter."
    else:
        guesses = guesses - 1
        print "You have %d guesses left." % (guesses)
        letters_guessed.append(letter)
print "The word:"
masked_word = ""
for letter in word:
    if letter in letters_guessed:
        masked_word += letter
    else: masked_word += "-"
print masked_word
guess = raw_input("Guess the word: ")
if guess == word:
    print "Congratulations, %s is the word!" % (guess)
else:
    print "Nope. The word is %s." % (word)
```

Output of program:

Output no 1,

Python 2.7.9 (default, Dec 10 2014, 12:24:55) [MSC v.1500 32 bit (Intel)] on win32

Type "copyright", "credits" or "license()" for more information.

```
>>> ===== RESTART =====
```

```
>>>
```

```
Guess the sport!
```

```
You get to give five letters.
```

```
There are 10 letters in the word.
```

```
Enter a letter: b
```

```
You have 4 guesses left.
```

```
Enter a letter: a
```

```
You have 3 guesses left.
```

```
Enter a letter: s
```

```
You have 2 guesses left.
```

```
Enter a letter: k
```

```
You have 1 guesses left.
```

```
Enter a letter: e
```

You have 0 guesses left.
The word:
baske-ba--
Guess the word: basketball
Congratulations, basketball is the word!

Output no 2,

```
>>> ===== RESTART =====  
>>> Guess the sport!  
You get to give five letters.  
There are 6 letters in the word.  
Enter a letter: c  
You have 4 guesses left.  
Enter a letter: i  
You have 3 guesses left.  
Enter a letter: r  
You have 2 guesses left.  
Enter a letter: c  
You already guessed that letter.  
Enter a letter: k  
You have 1 guesses left.  
Enter a letter: e  
You have 0 guesses left.  
The word:  
--cke-  
Guess the word: circket  
Nope. The word is hockey.
```

Image of program

```
File Edit Format Run Options Windows Help  
# import module for random functions  
import random  
# List of words for the computer to pick from  
words = ("basketball", "football", "hockey", "lacrosse", "baseball")  
# Word to be guessed; picked at random  
word = random.choice(words)  
letters_guessed = []  
print "Guess the sport!"  
print "You get to give five letters."  
print "There are %s letters in the word." % (len(word))  
guesses = 5  
while guesses != 0:  
    letter = raw_input("Enter a letter: ")  
    if letter in letters_guessed:  
        print "You already guessed that letter."  
    else:  
        guesses = guesses - 1  
        print "You have %d guesses left." % (guesses)  
        letters_guessed.append(letter)  
print "The word:"  
masked_word = ""  
for letter in word:  
    if letter in letters_guessed:  
        masked_word += letter  
    else: masked_word += "-"  
print masked_word  
guess = raw_input("Guess the word: ")  
if guess == word:  
    print "Congratulations, %s is the word!" % (guess)  
else:  
    print "Nope. The word is %s." % (word)
```

Image of outputs;

```
>>> ===== RESTART =====
>>>
Guess the sport!
You get to give five letters.
There are 6 letters in the word.
Enter a letter: c
You have 4 guesses left.
Enter a letter: i
You have 3 guesses left.
Enter a letter: r
You have 2 guesses left.
Enter a letter: c
You already guessed that letter.
Enter a letter: k
You have 1 guesses left.
Enter a letter: e
You have 0 guesses left.
The word:
--cke-
Guess the word: cirket
Nope. The word is hockey.
>>>
```

```
python.py:1: SyntaxWarning: '==' is not a valid keyword; did you mean 'is'? (python.py, line 1)
Type "copyright", "credits" or "license()" for more information.
```

```
>>> ===== RESTART =====
>>>
Guess the sport!
You get to give five letters.
There are 10 letters in the word.
Enter a letter: b
You have 4 guesses left.
Enter a letter: a
You have 3 guesses left.
Enter a letter: s
You have 2 guesses left.
Enter a letter: k
You have 1 guesses left.
Enter a letter: e
You have 0 guesses left.
The word:
baske-ba--
Guess the word: basketball
Congratulations, basketball is the word!
>>> |
```

Answer no 2:

The required Password Generator program in Python is,

```
import random
import string

# u_chars = Uppercase charaters
# l_chars = Lowercase charaters
# d_chars = Digits
# s_chars = Punctuation or Special Charaters

def get_random_string(u_chars = input ('enter upercase chars you want in password : '),
                    l_chars = input ('enter lowercase chars you want in password : '),
                    d_chars = input ('enter digits you want in password : '),
                    s_chars = input ('enter panctuation you want in password : ')):

    str_u_chars, str_l_chars, str_d_chars, str_s_chars = "", "", "", ""

    for i in range(u_chars):
        str_u_chars += random.SystemRandom().choice(string.ascii_uppercase)

    for i in range(l_chars):
        str_u_chars += random.SystemRandom().choice(string.ascii_lowercase)

    for i in range(d_chars):
        str_u_chars += random.SystemRandom().choice(string.digits)

    for i in range(s_chars):
        str_u_chars += random.SystemRandom().choice(string.punctuation)

    random_str = str_u_chars + str_l_chars + str_d_chars + str_s_chars
    random_str = ''.join(random.sample(random_str,len (random_str)))
    return random_str

print('Your Random password is :'), (get_random_string())
```

Outputs of program:

Output no 1,

Python 2.7.9 (default, Dec 10 2014, 12:24:55) [MSC v.1500 32 bit (Intel)] on win32

Type "copyright", "credits" or "license()" for more information.

```
>>> ===== RESTART =====
```

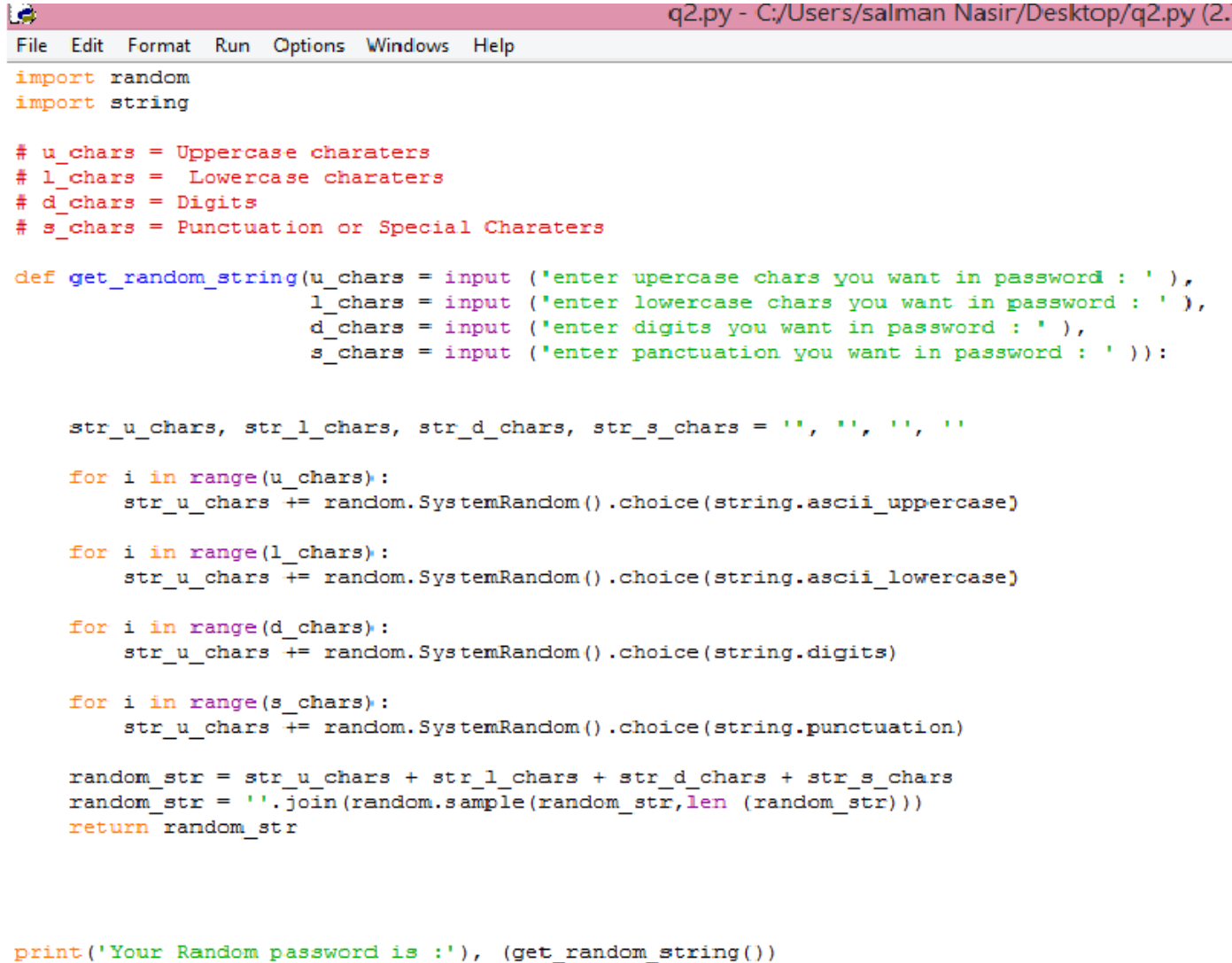
```
>>>
```

```
enter upercase chars you want in password : 3
enter lowercase chars you want in password : 2
enter digits you want in password : 3
enter panctuation you want in password : 2
Your Random password is : nVZN4{72,j
```

Output no 2

```
>>> ===== RESTART =====
enter upercase chars you want in password : 5
enter lowercase chars you want in password : 2
enter digits you want in password : 3
enter panctuation you want in password : 4
Your Random password is : 0mSC^{\`dV5Q+4X
>>>
```

Image of program;

A screenshot of a Python IDE window titled 'q2.py - C:/Users/salman Nasir/Desktop/q2.py (2)'. The window has a menu bar with 'File', 'Edit', 'Format', 'Run', 'Options', 'Windows', and 'Help'. The code is as follows:

```
import random
import string

# u_chars = Uppercase charaters
# l_chars = Lowercase charaters
# d_chars = Digits
# s_chars = Punctuation or Special Charaters

def get_random_string(u_chars = input ('enter upercase chars you want in password : '),
                    l_chars = input ('enter lowercase chars you want in password : '),
                    d_chars = input ('enter digits you want in password : '),
                    s_chars = input ('enter panctuation you want in password : ')):

    str_u_chars, str_l_chars, str_d_chars, str_s_chars = '', '', '', ''

    for i in range(u_chars):
        str_u_chars += random.SystemRandom().choice(string.ascii_uppercase)

    for i in range(l_chars):
        str_u_chars += random.SystemRandom().choice(string.ascii_lowercase)

    for i in range(d_chars):
        str_u_chars += random.SystemRandom().choice(string.digits)

    for i in range(s_chars):
        str_u_chars += random.SystemRandom().choice(string.punctuation)

    random_str = str_u_chars + str_l_chars + str_d_chars + str_s_chars
    random_str = ''.join(random.sample(random_str,len (random_str)))
    return random_str

print('Your Random password is :'), (get_random_string())
```

Image of outputs:

```
Python 2.7.9 Shell
File Edit Shell Debug Options Windows Help
Python 2.7.9 (default, Dec 10 2014, 12:24:55) [MSC v.1500 32 bit (Intel)] on win32
Type "copyright", "credits" or "license()" for more information.
>>> ===== RESTART =====
>>>
enter upercase chars you want in password : 5
enter lowercase chars you want in password : 2
enter digits you want in password : 3
enter panctuation you want in password : 4
Your Random password is : 0mSC^{'`dV5Q+4X
>>> |
```

```
Python 2.7.9 Shell
File Edit Shell Debug Options Windows Help
Python 2.7.9 (default, Dec 10 2014, 12:24:55) [MSC v.1500 32 bit (Intel)] on win32
Type "copyright", "credits" or "license()" for more information.
>>> ===== RESTART =====
>>>
enter upercase chars you want in password : 3
enter lowercase chars you want in password : 2
enter digits you want in password : 3
enter panctuation you want in password : 2
Your Random password is : nVZN4{72,j
>>> ===== RESTART =====
>>>
enter upercase chars you want in password :
```

Answer no 3:

The required Message Encryption Decryption program in Python is,

```
encrypt = input('Enter text to encrypt : ')
encrypt = encrypt.lower().replace(" ", " ")
for i in encrypt:
    print(chr(ord(i) + 5))
decrypt = input('Enter encrpted massge to decrypt : ')
decrypt = decrypt.lower().replace(" ", "")
for i in decrypt:
    print(chr(ord(i) - 5))
```

Outputs of program:

Output no 1,

Python 2.7.9 (default, Dec 10 2014, 12:24:55) [MSC v.1500 32 bit (Intel)] on win32
Type "copyright", "credits" or "license()" for more information.

```
>>> ===== RESTART =====
>>>
Enter text to encrypt : 'hi salman'
m
n
%
x
f
q
r
f
s
Enter encrpted massge to decrypt : 'mn%xfqrfs'
h
i

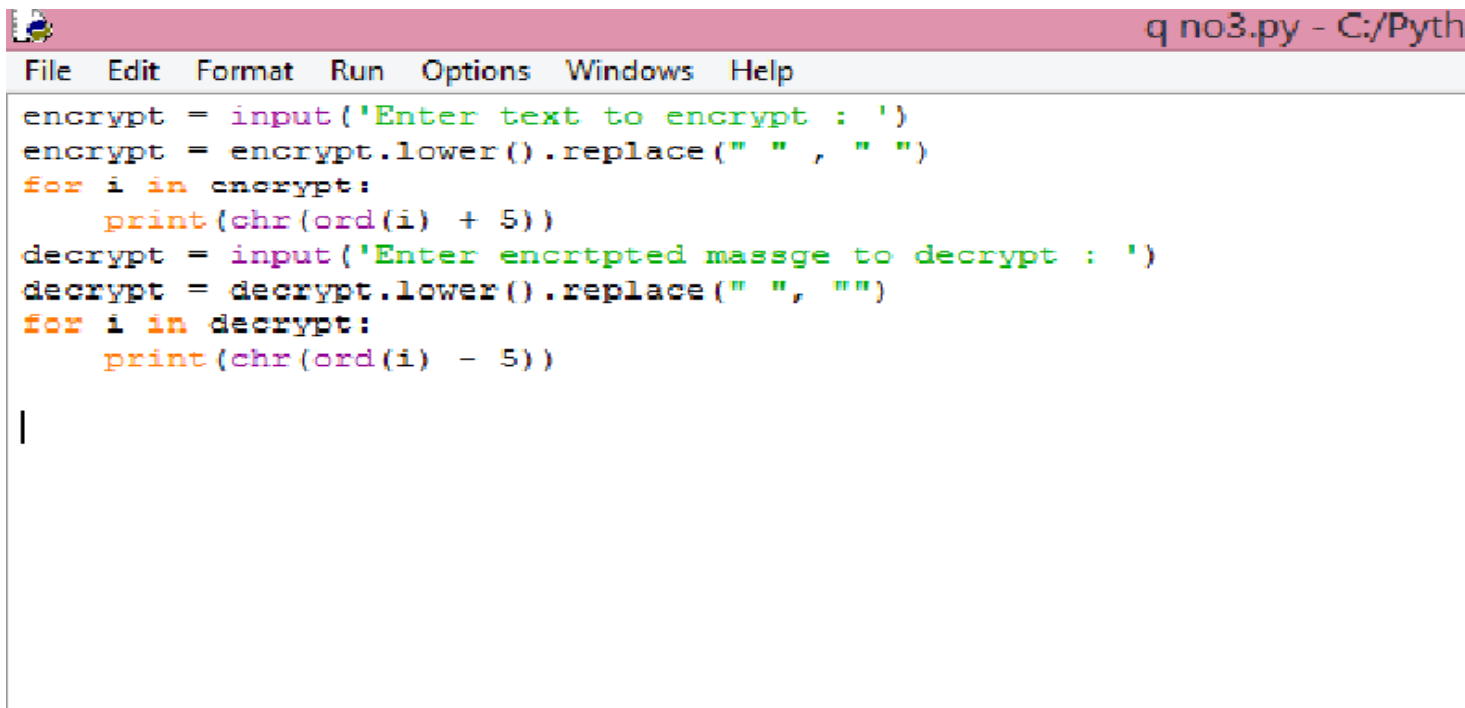
s
a
l
m
a
n
```


Output no 2,

```
>>> ===== RESTART =====
>>>
Enter text to encrypt : 'hello 12%'
m
j
q
q
t
%
6
7
*
Enter encrpted massge to decrypt : 'mjqqt%67*'
h
e
l
l
o

1
2
%
>>>
```

Image of program:

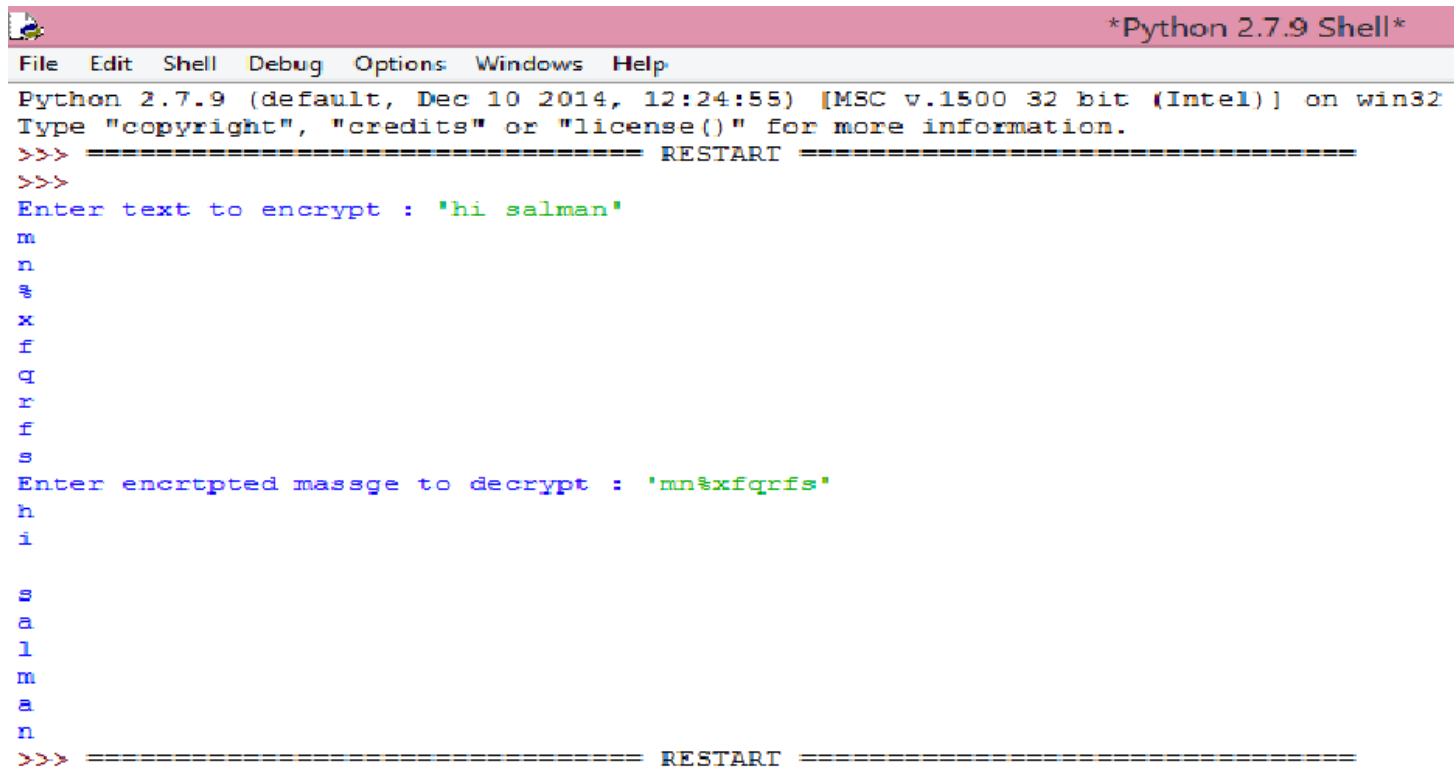


```
q no3.py - C:/Pyth
File Edit Format Run Options Windows Help
encrypt = input('Enter text to encrypt : ')
encrypt = encrypt.lower().replace(" ", " ")
for i in encrypt:
    print(chr(ord(i) + 5))
decrypt = input('Enter encrpted massge to decrypt : ')
decrypt = decrypt.lower().replace(" ", "")
for i in decrypt:
    print(chr(ord(i) - 5))
|
```

Image of outputs

```
>>> ===== RESTART =====
>>>
Enter text to encrypt : 'hello 12%'
m
j
q
q
t
%
6
7
*
Enter encrpted massge to decrypt : 'mjqqt%67*'
h
e
l
l
o

1
2
%
>>> ===== RESTART =====
>>>
Enter text to encrypt : |
```



```
*Python 2.7.9 Shell*
File Edit Shell Debug Options Windows Help
Python 2.7.9 (default, Dec 10 2014, 12:24:55) [MSC v.1500 32 bit (Intel)] on win32
Type "copyright", "credits" or "license()" for more information.
>>> ===== RESTART =====
>>>
Enter text to encrypt : 'hi salman'
m
n
%
x
f
q
r
f
s
Enter encrpted massge to decrypt : 'mn%xfqrf's'
h
i

s
a
l
m
a
n
>>> ===== RESTART =====
```