

Day 2

Lab Assignments:

Q.1. Write a program that asks the user how many days are in a particular month, and what day of the week the month begins on (0 for Monday, 1 for Tuesday, etc), and then prints a calendar for that month.

For example, here is the output for a 30-day month that begins on day 4 (Thursday):

```
S M T W T F S
      1 2 3
4 5 6 7 8 9 10
11 12 13 14 15 16 17
18 19 20 21 22 23 24
25 26 27 28 29 30
```

Q. 2. Define a procedure histogram() that takes a list of integers and prints a histogram to the screen. For

example, histogram([4, 9, 7]) should print the following:

```
****
```

```
*****
```

```
*****
```

Q. 3. Write a version of a palindrome recognizer that also accepts phrase palindromes such as "Go hang a salami I'm a lasagna hog.", "Was it a rat I saw?", "Step on no pets", "Sit on a potato pan, Otis", "Lisa

Bonet ate no basil", "Satan, oscillate my metallic sonatas", "I roamed under it as a tired nude Maori",

"Rise to vote sir", or the exclamation "Dammit, I'm mad!". Note that punctuation, capitalization, and

spacing are usually ignored.

Q. 4. A pangram is a sentence that contains all the letters of the English alphabet at least once, for

example: The quick brown fox jumps over the lazy dog.

Your task here is to write a function to check a

sentence to see if it is a pangram or not.

Q5.

In cryptography, a Caesar cipher is a very simple encryption techniques in which each letter in the plain text is replaced by a letter some fixed number of positions down the alphabet. For example, with a shift of 3, A would be replaced by D, B would become E, and so on. The method is named after Julius

Caesar, who used it to communicate with his generals. ROT-13 ("rotate by 13 places") is a widely used example of a Caesar cipher where the shift is 13. In Python, the key for ROT-13 may be represented by

means of the following dictionary: `key = {'a':'n', 'b':'o', 'c':'p', 'd':'q', 'e':'r', 'f':'s', 'g':'t', 'h':'u', 'i':'v', 'j':'w', 'k':'x', 'l':'y', 'm':'z', 'n':'a', 'o':'b', 'p':'c', 'q':'d', 'r':'e', 's':'f', 't':'g', 'u':'h', 'v':'i', 'w':'j', 'x':'k', 'y':'l', 'z':'m', 'A':'N', 'B':'O', 'C':'P', 'D':'Q', 'E':'R', 'F':'S', 'G':'T', 'H':'U', 'I':'V', 'J':'W', 'K':'X', 'L':'Y', 'M':'Z', 'N':'A', 'O':'B', 'P':'C', 'Q':'D', 'R':'E', 'S':'F', 'T':'G', 'U':'H', 'V':'I', 'W':'J', 'X':'K', 'Y':'L', 'Z':'M'}`

Your task in this exercise is to implement an encoder/decoder of ROT-13. Once you're done, you will be

able to read the following secret message:

Pnrfnepvcure? V zhpucersrePnrfnefnynq!

Note that since English has 26 characters, your ROT-13 program will be able to both encode and decode texts written in English.

Day 3

Q. 1. Given a dictionary of students and their favourite colours:

`people={'Arham':'Blue','Lisa':'Yellow','Vinod':'Purple','Jenny':'Pink'}`

1. Find out how many students are in the list

2. Change Lisa's favourite colour

3. Remove 'Jenny' and her favourite colour

4. Sort and print students and their favourite colours alphabetically by name

Write a function `translate()` that will translate a text into "rövarspråket" (Swedish for "robber's language").

That is, double every consonant and place an occurrence of "o" in between. For example, `translate("this is fun")` should return the string "tothohisosisosfofunon".

Q. 2. Write a program that contains a function that has one parameter, `n`, representing an integer greater

than 0. The function should return $n!$ (n factorial). Then write a main function that calls this function with the values 1 through 20, one at a time, printing the returned results. This is what your output should look like:

```
1 1
2 2
3 6
4 24
5 120
6 720
7 5040
8 40320
9 362880
10 3628800
```

Q. 3. We can define sum from 1 to x (i.e. $1 + 2 + \dots + x$) recursively as follows for integer $x \geq 1$:

1, if $x = 1$

$x + \text{sum from 1 to } x-1$ if $x > 1$

Complete the following Python program to compute the sum $1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 + 9 + 10$

recursively:

```
def main():
```

```
# compute and print  $1 + 2 + \dots + 10$ 
```

```
print sum(10)
```

```
def sum(x):
```

```
# you complete this function recursively main()
```

Q. 4. Define a function overlapping() that takes two lists and returns True if they have at least one

member in common, False otherwise.

Q. 5. Write a function find_longest_word() that takes a list of words and returns the length of the longest one.

Q. 6. Write a function filter_long_words() that takes a list of words and an integer n and returns the list of words that are longer than n

Q. 7. Define a simple "spelling correction" function correct() that takes a string and sees to it that

1) two or more occurrences of the space character is compressed into one, and

2) inserts an extra space after a period if the period is directly followed by a letter.

e.g. correct("This is very funny and cool.Indeed!") should return "This is very funny and cool. Indeed!"

Q. 8. In English, present participle is formed by adding suffix -ing to infinite form: go -> going. A simple set

of heuristic rules can be given as follows:

☐ If the verb ends in e, drop the e and add ing (if not exception: be, see, flee, knee, etc.)

☐ If the verb ends in ie, change ie to y and add ing

□ For words consisting of consonant-vowel-consonant, double the final letter before adding ing

□ By default just add ing

Your task in this exercise is to define a function `make_ing_form()` which given a verb in infinitive form

returns its present participle form. Test your function with words such as lie, see, move and hug.

File handling assignments

Write a program to accept empno, employee name, Salary, Designation
empno:empname:salary:designation
write the details into a file empdata.dat

Write another program to read contents from the file

If designation is

manager then add bonus=2000 in the salary and display on the screen

analyst then add bonus=1500 in the salary

otherwise add bonus=1000 in the salary

step 1

open file empdata.dat in append mode

Step2

Accept empno in variable eno

ename in varen

salary in varsal

designation in vardesig

step 3

concatenate all the variable to convert : separated list

Step 4

Write the concatenated string into file

Step5

Repeat step 2 to step 4 till user wants to enter new data

Step 6

Close the file

To read data

Step 1:

Open file empdata.dat in read mode

Step 2

Read the next line from file

Step 3

Split the line at : position

Step 4

Check the designation and increase the salary accordingly and display it
And display it

Step 5

Repeat step 2 to 4 till file finishes

Step 6

Close the file

Object oriented programming

Write a class MyClass it contains 2 members

One number and one string

Write default constructor, parametrized constructor

Overload +, *, - operator

+ - will do the addition of the number and
ascii of 1st character of the string

'- - it will chk if num > ascii of 1st character of the string

Then num - ascii of 1st character of the string

Else ascii of 1st character of the string - num

'* will do the multiplication num and
ascii of last character of the string

Inheritance

Create a Person class

pid, pname, emailed, mobno

Write init, setter and getter, display method

Create a class Employee child of Person

Dept, desg, sal

Write init, setter, getter, override display method

Write method calculateNetSal -

NetSal = sal + 10% of sal + 15% of sal - 5% of sal

Create a class Member is child of Person

membertype, amtPaid

Write init, setter, getter, override display method,

Database Assignment

Write a program to display choices to user

1. Insert---- call insertDept function
2. Delete---- call deleteDept – delete a particular record

3. Update---- call updateDept – update details of particular department
4. Display All --- call displayAllDept – display only department name
5. Display ----- call displayDept – display a particular department
6. Displaydept – will display all the locations which contains or in it
7. Exit

Day 5(numpy,pandas,matplotlib,scipy)

1. Complete following program
import pandas as pd

```
mymoviedata=pd.read_table("http://bit.ly/movieusers",sep="|",header=None)
print(mymoviedata.head())
```

```
# add headings to the column- col1,col2,col3,col4,col5
#display only column col3
#add col6 concatenate values of col2 and col3 and seperate them by :
# retrieve values of col1 and col4 display bar graph
# display names of all the columns.
```

2.

```
#create a list for storing year 2010 to 2014
#create a list for each year for storing sales amount for of 5 products in each years
#draw pie chart and stack graph to compare sales
```