AMICUS INTERNATIONAL SCHOOL, BHARUCH

Practical File
of
Computer Science (083)

ACADEMIC YEAR: 2023-24

Submitted by:

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Certificate

This is to certify that **Dipam Sen**, student of Class XII, **Amicus International School, Bharuch** has completed the PRACTICAL FILE during the academic year **2023-24** towards partial fulfilment of credit for the Computer Science practical evaluation of CBSE and submitted a satisfactory report, as compiled in the following pages, under my supervision.

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Program 1

Write a user defined function to accept a string as an input and to count and display the total number of times a character is present in a string.

Program:

```
def count_occ(str, ch):
  count = 0
  for i in str:
    if i == ch:
      count += 1
  return count

val = input("Enter a string: ")
c = input("Enter a character: ")
num = count_occ(val, c)

print()
print("The character occurs " + str(num) + "
times in the string.")
```

Output:

```
Enter a string: Computer Science
Enter a character: e

The character occurs 3 times in the string.
```

Program 2

Write a program to compute the area of rectangle on the basis of length and breadth inputted by the user as the arguments to this function.

Program:

```
def area(l, b):
  return l * b

length = int(input("Enter length: "))
breadth = int(input("Enter breadth: "))

val = area(length, breadth)

print("Area of the rectangle is", val)
```

Output:

```
Enter length: 20
Enter breadth: 40
Area of the rectangle is 800
```

Program 3

Write a menu driven program using different functions for the following menu:

1. Check no. is Palindrome or not
2. Check no. is Armstrong or not
3. Exit

Program:

```
def is_palindrome(num):
  s = str(num)
  if s == s[::-1]:
    return True
  return False

def is_armstrong(num):
  n = len(str(num))
  total = 0
  for digit in str(num):
    total += int(digit)**n
  if total == num:
    return True
  return False

while True:
  print("======================")
  print("Menu")
  print("======================")
  print()
```

```
  print("1. Check if number is Palindrome")
  print("2. Check if number is Armstrong")
  print("3. Exit")
  choice = int(input("Enter your choice (1-3):
"))
  if choice == 1:
    num = int(input("Enter your number: "))
    if is_palindrome(num):
      print("Your number is a palindrome!")
    else:
      print("Your number is not a palindrome!")
  elif choice == 2:
    num = int(input("Enter your number: "))
    if is_armstrong(num):
      print("Your number is armstrong!")
    else:
      print("Your number is not angstrom!")
  elif choice == 3:
    break
  else:
    continue
```

Output:

```
======================
Menu
======================

1. Check if number is Palindrome
2. Check if number is Armstrong
```

```
3. Exit
Enter your choice (1-3): 1
Enter your number: 21412
Your number is a palindrome!
======================
Menu
======================

1. Check if number is Palindrome
2. Check if number is Armstrong
3. Exit
Enter your choice (1-3): 2
Enter your number: 1634
Your number is armstrong!
======================
Menu
======================

1. Check if number is Palindrome
2. Check if number is Armstrong
3. Exit
Enter your choice (1-3): 3
```

Program 4

Write a program using the function to print the Fibonacci series up to n numbers.

Program:

```
def fibonacci(n):
  # start off with 0 and 1
  a, b = 0, 1
  series = [a, b]
  while len(series) < n:
    # add the next number
    series.append(a + b)
    # a and b now point to the next two numbers
    # a points to b, b points to a+b
    a, b = b, a + b
  return series

num = int(input("Enter number of terms of
Fibonacci Sequence: "))
vals = fibonacci(num)
for val in vals:
  print(val, end="\t")
```

Output:

```
Enter number of terms of Fibonacci Sequence: 12
0       1       1       2       3       5
8       13      21      34      55      89
```

Program 5

Write a random number generator using function that generates random numbers between 1 to 6 (simulates a dice).

Program:

```
import random

def dice():
  return random.randint(1, 6)

print("🎲 Rolling the dice 🎲")
print("You got", dice(), "!")
```

Output:

```
🎲 Rolling the dice 🎲
You got 1 !
```

Program 6

Write a python program to read a file named “article.txt”, count and print the following:

(i) total alphabets
(ii) total upper case alphabets
(iii) total lower case alphabets
(iv) total digits
(v) total spaces
(vi) total special characters

Program:

```
alpha = 0
upper = 0
lower = 0
digit = 0
space = 0
spchr = 0

f = open("./article.txt")
data = f.read()
for char in data:
  if char.isalpha():
    alpha += 1
  if char.isupper():
    upper += 1
  if char.islower():
    lower += 1
  if char.isdigit():
```

```
    digit += 1
  if char.isspace():
    space += 1
  if not char.isalnum() and not char.isspace():
    spchr += 1

print("Total alphabets:", alpha)
print("Total uppercase:", upper)
print("Total lowercase:", lower)
print("Total digits:", digit)
print("Total spaces:", space)
print("Total special characters:", spchr)

f.close()
```

article.txt

```
Hello World!

Sample text 0123456789 #$%^&*()
```

Output:

```
Total alphabets: 20
Total uppercase: 3
Total lowercase: 17
Total digits: 10
Total spaces: 7
Total special characters: 9
```

Program 7

Read a text file and display the number of vowels/ consonants/uppercase/lowercase characters in the file.

Program:

```
upper = 0
lower = 0
vowel = 0
conso = 0

vowellist = "aeiou"

with open("./article.txt") as f:
  data = f.read()
  for char in data:
    if char.isupper():
      upper += 1
    if char.islower():
      lower += 1
    if char.isalpha():
      if char.lower() in vowellist:
        vowel += 1
      else:
        conso += 1

  print("Total vowels:", vowel)
  print("Total consonants:", conso)
  print("Total uppercase:", upper)
  print("Total lowercase:", lower)
```

article.txt

```
Python
SQL
File Handling
```

Output:

```
Total vowels: 5
Total consonants: 16
Total uppercase: 6
Total lowercase: 15
```

Program 8

Read a text file line by line and display each word separated by a #.

Program:

```
f = open("article.txt")
l = " "
while l:
  l = f.readline()
  words = l.split(" ")
  print("#".join(words), end="")
f.close()
```

article.txt

```
Types of functions
Creating user defined function
Arguments and Parameters
Function returning value
Flow of execution
```

Output:

```
Types#of#functions
Creating#user#defined#function
Arguments#and#Parameters
```

```
Function#returning#value
Flow#of#execution
```

Program 9

Program to read and display those lines from the text file that starts with alphabet ‘T’

Program:

```
f = open("article.txt")
l = ' '

while l:
  l = f.readline()
  if l.startswith("T"):
    print(l.strip())
```

article.txt

```
Time
Random
Tkinter
Numpy
Scipy
Math
Turtle
```

Output:

```
Time
Tkinter
Turtle
```

Program 10

Remove all the lines that contain the character ‘a’ in a file and write it to another file.

Program:

```
file1 = open("article.txt")
file2 = open("output.txt", "w")

l = " "
while l:
  l = file1.readline()
  if "a" not in l:
    file2.write(l)

file2.close()
```

article.txt

```
Computer Systems and Organisation
Society & Ethics
Computational Thinking and Programming
Computer Networks
Database Management
```

output.txt (Output)

Society & Ethics
Computer Networks

Program 11

Create a binary file with roll number and name. Search for a given roll number and display the name, if not found display appropriate message.

Program 12

Create a binary file with the roll no. name and marks. Input a roll number and update the marks.

Program 13

Write a program which adds any random five even numbers in a list that falls between the highest and lowest no. (Both highest the lowest numbers are accepted from the user)

Program:

```
import random

lo = int(input("Enter lower bound: "))
hi = int(input("Enter upper bound: "))

lst = []

while len(lst) < 5:
  num = random.randint(lo + 1, hi - 1)
  if num % 2 == 0:
    lst.append(num)

print("The list of numbers is: ", end="")
print(lst)
```

Output:

```
Enter lower bound: 10
Enter upper bound: 32
The list of numbers is: [26, 28, 22, 30, 12]
```

Program 14

Write a program using python to get 10 players name and their score. Write the input in a csv file. Accept a player name using python. Read the csv file to display the name and the score. If the player name is not found give an appropriate message.

Program 15

Create a CSV file by entering user-id and password, read and search the password for given user-id.

Program 16

Write a python program using function `PUSH(Arr)`, where `Arr` is a list of numbers. From this list push all numbers divisible by 5 into a stack implemented by using a list. Display the stack if it has at least one element, otherwise display appropriate error message.

Program 17

Write a python program using function `POP(Arr)`, where `Arr` is a stack implemented by a list of numbers. The function returns the value deleted from the stack.

Program 18

Write a python program to integrate MySQL with Python by inserting records to `EMP` table and displaying records.

Program 19

Create an Employee Table with the fields `Empno`, `Empname`, `Desig`, `Dept`, `Age` and `Place`. Enter five records into the table.

- Add two more records to the table.
- Modify the table structure by adding one more field namely date of joining. (`doj`)
- Check for `NULL` value in `doj` of any record.

Program 20

Create Student table with following fields and enter data as given in the table below.

Field	Type	Size
Reg_No	char	5
Sname	varchar	15
Age	int	2
Dept	varchar	10
Class	char	3

Reg_No	Sname	Age	Dept	Class
M1001	Harish	19	ME	ME1
M1002	Akash	20	ME	ME2
C1001	Sneha	20	CSE	CS1
C1002	Lithya	19	CSE	CS2
E1001	Rat	20	ECE	EC1
E1002	Leena	21	EEE	EE1
E1003	Rose	20	ECE	EC2

Then, query the following:

(i) List the students whose department is “CSE”.
(ii) List all the students of age 20 and more in ME department.
(iii) List the students department wise.
(iv) Modify the class ME2 to ME1.