
Problem Solving Assignments

Python Language

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Conditional statements

Q1: Enter the marks from the user and display the corresponding grades:

Marks	grade
100-80	A
80-60	B
60-40	C
Below 40	Fail

Q2: Accept a number and check if it is positive or negative or zero.

Q3: Accept a number and check if it is odd or even.

Q4: Accept a character and check whether it is vowel or not.

Q5: Accept a character and check if it is vowel, consonant or a special character.

Q6: Accept a number between 1 and 7 and print the corresponding week days. If the number is out of range, print message "wrong input".

Q7: Accept a number between 0 and 9 and print the words equivalent.

Q8: Accept a number between 1 and 12 and print the month it represents in words.

Q9: Accept a number between 1 and 5. If the user:

Enters 1: add two numbers

Enters 2: subtract two numbers

Enters 3: division of two numbers

Enters 4: multiplication of two numbers

Enters 5: exit the program

Q10: Enter three numbers and check the greatest out of the three.

LOOPS β

1. Print the following pattern :

```
***  
***  
***
```

2. Print the following pattern :

```
111  
111  
111
```

3. Print the following pattern :

```
123  
123  
123
```

4. Print the following pattern :

```
111  
222  
333
```

5. Print the following pattern :

```
123  
456  
789
```

6. Print the following pattern :

```
333  
222  
111
```

7. Print the following pattern :

```
321  
321  
321
```

8. Print the following pattern :

```
987  
654  
321
```

9. Print the following pattern :

```
*  
**  
***
```

10. Print the following pattern :

```
***  
**  
*
```

11. Print the following pattern :

```
1
12
123
```

12. Print the following pattern :

```
1
22
333
```

13. Print the following pattern :

```
3
22
111
```

14. Print the following pattern :

```
111
22
3
```

15. Print the following pattern :

```
3
23
123
```

16. Print the following pattern :

```
3
32
321
```



17. Print the following pattern:

```
* * *
* *
*
```

18. Print the following pattern :

```
123
12
1
```

19. Print the following pattern :

```
111
22
3
```

20. Print the following pattern :

```
*
* *
* * *
```

21. Print the following pattern:

```
*  
* *  
* * *  
* * * *
```

22. Print the following pattern:

```
A  
A B  
A B C
```

23. Print the following pattern:

```
C B A  
C B  
C
```

24. Print the following pattern:

```
A  
A B  
A B C
```

While Loop

Q1: Write a program to print the series starting from 0 till the user wants.

Q2: Write a program to print the series starting from the number entered by the user till 0.

Q3: Write a program to print the Fibonacci series till the user wants.

Q4: Write a program to generate a table of the entered number.

Q5: Write a program to input marks of 5 students in 3 subjects and print their marks average marks.

Q6: Accept a number and reverse it i.e. 1234-->4321

Q7: Write a program to print factorial of a number entered i.e. $5*4*3*2*1=120$.

Q8: Write a program to print the series m^n where m and n are entered by the user.

Strings

1. Write a program to accept a string from the user and display it.

OUTPUT:

ENTER A STRING: COMPUHELP

THE STRING YOU ENTERED IS: COMPUHELP

2. Write a program to accept a string from the user and display it in reverse.

OUTPUT:

ENTER A STRING: COMPUHELP

THE STRING YOU ENTERED IS: PLEHUPMOC

3. Write a program to find the length of an entered string and display it as follows:

ENTER A STRING: COMPUHELP

THE LENGTH OF THE STRING IS: 9

4. Write a program to accept a string in upper case and convert it into lower case. The output should

be:

ENTER A STRING IN UPPER CASE: COMPUHELP

THE STRING IN LOWER CASE: compuhelp

5. Write a program to accept a string in lower case and convert it into upper case. The output should

be:

ENTER A STRING IN LOWER CASE: compuhelp

THE STRING IN UPPER CASE: COMPUHELP

- 8 Write program to count and print the number of vowels in an entered string. The output should be as follows:

ENTER A STRING: COMPUHELP

THE VOWELS ARE: O U E

THE NUMBER OF VOWELS IS: 3

9. Write a program to count and print the number of consonants in an entered string. The output should be as follows:

ENTER A STRING: COMPUHELP

THE CONSONANTS ARE: CMPHLP

THE NUMBER OF CONSONANTS ARE: 6

10. Write a program to accept two character arrays and copy the first string into second one. The output should be as follows:
ENTER THE STRING: COMPUHELP
THE COPY OF STRING IS: COMPUHELP
11. Write a program to find out the number of words in a sentence. The output should be:
ENTER A SENTENCE: COMPUHELP COMPUTER EDUCATION
THE NUMBERS OF WORDS ARE: 3

Functions

1. What is function? Why do we need them? Explain with the help of pictorial diagrams.
2. What are the stages of the functions? What is the default return type of any function?
3. How is function declaration different from function definition?
4. How many types of functions are provided by the c language? Explain.
5. How many different types of user-defined functions we can make?
6. What is the use of main () in a program? What will happen, if there is no main () in our Program?
7. What is calling and called function?
8. Write a function sum () to calculate the sum of four numbers and display the sum. Neither does

the function return any value nor accepts any value. The output should be as follows:

```
ENTER FIRST NUMBER: 3  
ENTER SECOND NUMBER: 4  
ENTER THIRD NUMBER: 2  
ENTER THIRD NUMBER: 1  
THE SUM OF ALL NUMBERS IS: 10
```

9. Write a program which contains the following functions performing all arithmetic operations:
Add () - function to add two numbers
Sub () - function to subtract the smaller number from the greater one.
Div () - function to divide the greater number from the smaller one
Mull () - function to multiply two numbers
If mull () function is called for instance, the output should be as following:

```
ENTER FIRST NUMBER: 3  
ENTER SECOND NUMBER: 4  
THE PRODUCT OF THE TWO NUMBERS IS: 12
```

10. What do you mean by arguments? What other name can you give to arguments?
11. Write a function odd () to display all the odd numbers from 1 to n, where n is the ending number passed as arguments to the function. The output should be as follows:
ENTER THE NUMBER: 8
THE ODD SERIES IS: 1 3 5 7
12. Write a function even () to display all the even numbers from 1 to n, where n is the ending number passed as an argument to the function. The output should be as follows:
ENTER THE NUMBER: 8
THE EVEN SERIES IS: 2 4 6 8

13. Write a program for following output:

ENTER A CHARACTER: \$
\$

14. Write a function series () which accept two values as arguments. One value is the starting value of the series and the second value is the ending value of the series. The function prints all

the numbers from the starting value till the ending value. The output should be as follows:

ENTER THE STARTING VALUE: 5
ENTER THE ENDING VALUE: 15
THE SERIES IS: 5 6 7 8 9 10 11 12 13 14 15

15. Write a function named is_pos_neg () which accepts a number and calculates if the entered number is positive or negative.

16. Write a function Fibonacci () to generate the Fibonacci series till „n“ numbers, where n is an integer passed as argument to the function. The output should be:

Enter the number: 9
Fibonacci series: 0 1 1 2 3 5 8

17. Write a function to_upper () which accepts a single alphabet in lower case and converts that alphabet into upper case. The output should be as follows:

ENTER AN ALPHABET IN LOWER CASE: k
THE ALPHABET IN UPPER CASE IS: K

18. Write a function to_lower () which accepts a single alphabet in upper case and converts that alphabet into lower case. The output should be as follows:

ENTER AN ALPHABET IN UPPER CASE: K
THE ALPHABET IN LOWER CASE IS: k

19. Write a function to generate the following series till „n“, where n is an integer passed as an argument to the function. The output should be as follows:

ENTER A NUMBER: 5
SERIES: 1+4+9+16+25=55

20. What is the use of the return statement? Where is the return statement placed? Maximum how many values can be returned to a function?

21. Write a function factorial() which calculates the factorial of a number given as an argument to the function and returns the value of that factorial of that number to the calling function. The output should be should be as follows:

ENTER A NUMBER: 5

THE FACTORIAL IS: 5*4*3*2*1=120

22. Write a function swap () which accepts two numbers as arguments and swaps the value of these two variables. The output should be as follows:

ENTER FIRST NUMBER: 5

ENTER SECOND NUMBER: 8

THE VALUE OF THE NUMBERS BEFORE SWAPPING IS:

FIRST: 5

SECOND: 8

THE VALUES AFTER SWAPPING IS:

FIRST: 8

SECOND: 5.

File Handling

- Q1 Write a program to create a file and write a string into it.
- Q2 Write a program to create a file. Accept a number from the user and write that number into the file which you have created.
- Q3 Write a program to create a file. Accept a number from the user and write that number into the file which you have created. Now read the number from the file and display it on the console screen
- Q4 Write a program to create a file. Accept a number from the user and write that number into the file which you have created. Now read the number from the file and write it into another file.
- Q5 Write a program to create a text file and read all the contents of the file character by character and display all the contents on the console screen.
- Q6 Write a program to create a text file and count the number of characters in it.
- Q7 Write a program to create a text file and count the number of vowels in it
- Q8 Write a program to create a text file and count the number of upper case letters and lower case letters in it.
- Q9 Write a program to create a file and count the number of spaces and words in the file.
- Q10 Write a program to create a file and count the number of lines in the file.
- Q11 Write a program to write 10 numbers into a file and display the even and odd numbers separately on the console screen.
- Q12 Write a program to enter few characters from the user and store in a file. Enter another character and convert all occurrences of that character to upper case.
- Q13 Write a program to enter the rollno, name, and fees of the student through structures and save the data into a file.