



**Department of Computer Science and Engineering  
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# **Lecture Notes Python for Computational Problem Solving UE23CS151A**

***Lecture #22, #25, #26  
Problem Solving using Control Structures  
Practice Session + Revision***

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**Many Thanks to  
Dr. Shylaja S S (Director, CCBD and CDSAML Research Centers, Former  
Chairperson, CSE, PES University)  
Prof. Chitra G M (Asst. Prof, Dept. of CSE, PCPS Anchor – 2022)**

## **Practice Programs**

**Try solving these problem statements. Solutions for a few are available in this link:**

**[https://drive.google.com/file/d/1pswWmXm7uq1pjj2HL5rjc3OI2UXBylRK/view?usp=drive\\_link](https://drive.google.com/file/d/1pswWmXm7uq1pjj2HL5rjc3OI2UXBylRK/view?usp=drive_link)**

1. Program to print from 1 to n in separate lines.
2. Program to find the sum of all numbers from 1 to n.
3. Input a string from the user. Print the Unicode of every character in the string in a separate line.
4. Program to print all odd numbers from 1 to n in separate lines.
5. Program to print all numbers divisible by both 3 and 5 between 1 and n in separate lines.
6. Program to print all numbers between 1 and n which are ending with 9 in separate lines.
7. Program to print all numbers from 1 to 10 except 5.
8. WAP to take first name, middle name and last name as input from the user in different lines and print it on the terminal as one name with spaces.
9. Classify the number entered by the user as even number or odd number. Till user says stop, he must be able to enter the number for checking its oddness or evenness.
10. Generate n random integers between 1 and 1000.
11. WAP to print all Armstrong numbers from 1 to n. If not available, display proper message to the user.

Armstrong number is a number, if the sum of its own digits raised to the power number of digits gives the number itself. For example, 0, 1, 153, 370, 371, 407 are three-digit Armstrong numbers and, 1634, 8208, 9474 are four-digit Armstrong numbers and there are many more.

12. Given a number, find whether the number is an Armstrong number or not

13. Display whether a given number is perfect number or not.

A perfect number is a positive integer that is equal to the sum of its positive divisors, excluding the number itself.

14. Program to swap first and last digits of a given number and print the new number.

15. Program to check whether a given number is palindrome or not for any positive integer. Display appropriate message if the number is –ve.

16. Generate all three digit palindrome numbers.

17. Program to find all Factors of a given number.

18. Program to print all Strong numbers between 1 to n.

Strong number is a special number whose sum of the factorial of digits is equal to the original number. For Example: 145 is strong number. Since,  $1! + 4! + 5!$

19. Program to display the hexadecimal and octal version of a given number.

20. Program to enter a number and print its reverse.

21. WAP to print multiplication table of any given number.

22. Given 4 sides and two diagonals of a quadrilateral, classify the quadrilateral as square, rhombus, rectangle, parallelogram, kite, just quadrilateral.

Requirements: Read four sides and two diagonals. Store in different variables and convert them to integer values

Conditions:

- a. If all sides equal and diagonals equal, display "it is a square"
- b. Else if two opposite sides equal and diagonals equal, display "it is a rectangle"
- c. else if ...

23. Given 3 points A(x1, y1), B(x2, y2) and C(x3, y3), find whether they are collinear. If no, find the centroid.

Logic: Slope of AB = Slope of BC = Slope of AC  
Centroid =  $((x1+x2+x3)/3, (y1+y2+y3)/3)$

24. For a given n, display as below. Example n = 4

a  
ab  
abc  
abcd

25. Given n, display the following (say 4)

```
i)1 0 0 0
   0 1 0 0
   0 0 1 0
   0 0 0 1
```

```
ii) 1 2 3 4
     5 6 7 8
     9 10 11 12
    13 14 15 16
```

26. Given three sides of a triangle, check whether the triangle can be formed or not. If triangle can be formed, find the type of triangle.

27. Print the lengths of all words in a given string. After the first length, put a decimal point.

Input: May I have a large container of coffee? Expected Output: 3.1415926

28. Program to find the diameter, area and circumference of circle by taking radius as the input from the user

29. Program to convert the given Decimal number into Binary

30. Program to display sum of odd numbers and even numbers separately between 1 to n.

**Few more listed below:**

1. Display Snake - Ladder Game chart
2. Program to calculate the LCM of two numbers.
3. Sumedh offers a discount of 10% on the cost price of the TV unit. TV unit price is 35000 . What is the selling price of a TV unit?
4. A shop will give a discount of 10% if the cost of the quantity purchased is more than 1000. Ask the user for quantity. Suppose, one unit will cost 100. Judge and print total cost for the user.

```
i.    quantity = int(input("Enter the number of quantities"))
ii.   if (quantity*100 > 1000):
      1. print ("Cost is",((quantity*100)-(.1*quantity*100)))
iii.  else:
      1. print ("Cost is",quantity*100)
```

5. Count the number of factors for a given number and the sum of factors for a given number.
6. Display the squares of all numbers and the square root of all numbers from 1 to n.
7. Program to display the nth Fibonacci number.
8. Program to display a number from fibonacci series which is just greater than n
9. Program to find the product of three sequential terms from 1 to n.  
Hint: If  $n = 8$ ,  
Output: 6, 120, 56
10. Display all the numbers from 1 to n except  $n//2$

**-END-**