

1. Using recursion to reverse a string, check whether it is palindrome.
2. Write a program to input a natural number N and print all possible Pythagorean triplets till N. A Pythagorean triplet is defined by $a^2 + b^2 = c^2$.
3. Write a program that takes A(real number) and N (natural number) from the user and prints the sum of the following series.
$$(a^1)/0! + (a^2)/1! + (a^3)/2! + \dots + (a^N)/(N-1)!$$
4. Print the HCF of two numbers using recursion.
5. Write a program that considers a list of numbers and prints all the duplicates in the list along with their duplicate indices in the form (number, first index, second index)
Example [1,2,3,1,7,-8,-8,1]
Output:
(1,0,3)
(1,0,7)
(-8,5,6)
6. Write a program that considers a list of numbers and prints only the first duplicates in the list along with their duplicate indices in the form (number, first index, second index)
Example [1,2,3,1,7,-8,-8,1]
Output:
(1,0,3)
7. Write a program that takes N from the user. Then, consider a square grid of N*N where you can move left, right, up, and down from the current cell on the grid. Starting at position, a toy car is stationed at (0,0). You ask the user to enter a list of directions to move and then print the final position of the car. If a boundary condition is hit, the car stops there.
For N =3
And direction list [Right, Down, Left, Down, Up]
Output:
(1,0)
8. You can also make the above game interactive, where the user continues to end in the next direction to move until they enter "End." If the toy car hits the boundary at any point, tell the user the same and continue asking for the next movement until the user enters a valid direction.
9. Write a program that takes the type of object as input (Cylinder, Sphere, Cube, Cuboid) from the user, and then ask for specific dimensions and prints the respective volume. For example, for a Sphere, you ask only for the radius, whereas for a cuboid, you ask to enter the height, weight, and length. Implement different functions for calculating the volume of respective objects.
10. Write a program that takes H as the height of the pyramid from the user and prints the Pascal triangle till height H.