# VIT - Vellore

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## BCSE102P_Structured and Object Oriented Programming Lab_VL2024250502365

### VIT V_Structured and OOP_Lab 3_COD_Hard_Pointers and Functions

Attempt : 1
Total Mark : 20
Marks Obtained : 20

### Section 1 : Coding

1. Problem Statement

Ria is a mathematician who loves exploring combinatorics. She is working on a project that involves calculating permutations.

Ria wants to create a program that takes the values of n and r as input and calculates the permutations of n elements taken r at a time.

Write a program using pointers and a function calculatePermutations that, given the values of n and r, calculates and prints the permutations of n elements taken r at a time.

Permutation: n! / (n - r)!

***Answer***

```
// You are using GCC
#include<stdio.h>
double fact(double a){
    if(a == 1 || a == 0){
        return 1;
    }
    return a*fact(a-1);
}
int main(){
    double n,r;
    scanf("%lf",&n);
    scanf("%lf",&r);
    printf("%.0lf",(fact(n)/fact(n-r)));
    return 0;
}
```

***Status :*** Correct **Marks : 10/10**

2. Problem Statement

Ginny, an aspiring mathematician, is exploring the wonders of right-angled triangles and their hypotenuses.

She wishes to create a program that takes the lengths of two sides of a right-angled triangle as input and calculates the length of the hypotenuse.

Write a program using pointers and a function calculateHypotenuse, given the lengths of two sides, calculates and prints the length of the hypotenuse.

Hypotenuse: √(a2 + b2) where a and b represent side 1 and side 2 respectively.

***Answer***

```
// You are using GCC
#include<stdio.h>
#include<math.h>
float calculateHypotenuse(float *a, float *b){
    return sqrt((((*a)*(*a)) + ((*b)*(*b))));
```

```
}
int main(){
    float l1,l2;
    scanf("%f",&l1);
    scanf("%f",&l2);
    printf("%.2lf",calculateHypotenuse(&l1,&l2));
    return 0;
}
```

***Status :*** Correct ***Marks : 10/10***