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Q1.State the differences between object oriented programming and procedure oriented programming ?

Basis for comparison	POP	OOP
Basic	Procedure/Structure oriented .	Object oriented.
Basis	Main focus is on "how to get the task done" i.e. on the procedure or structure of a program .	Main focus is on 'data security'. Hence, only objects are permitted to access the entities of a class.
Division	Large program is divided into units called functions.	Entire program is divided into objects.
Entity accessing mode	No access specifier observed.	Access specifiers are "public", "private", "protected".
Overloading or Polymorphism	Neither it overload functions nor operators.	It overloads functions, constructors, and operators.
Inheritance	There is no provision of inheritance.	Inheritance achieved in three modes public, private and protected.
Data hiding & security	There is no proper way of hiding the data, so data is insecure	Data is hidden in three modes: public, private, and protected. hence data security increases.
Data sharing	Global data is shared among the functions in the program.	Data is shared among the objects through the member functions.

Q2. Difference between Calloc function and new operator ?

Calloc()	New operator
1.**calloc()** are library functions that allocate memory dynamically. It means that memory is allocated during	The new operator is an **operator** which denotes a request for memory allocation on the Heap. If sufficient

runtime(execution of the program) from the heap segment.
 	
2.calloc() allocates the memory and also initializes the allocated memory block to zero. If we try to access the content of these blocks then we'll get 0.
Example program---
`#include <stdio.h>`
`#include <stdlib.h>`
`int main()`
`{`
`int* arr;`
`arr = (int*)malloc(5 * sizeof(int));`
`free(arr);`
`arr = (int*)calloc(5, sizeof(int));`
`free(arr);`
 	
`return (0);`
`}`
	memory is available, new operator initializes the memory and returns the address of the newly allocated and initialized memory to the pointer variable. When you create an object of class using new keyword(normal new).
	
	1.The memory for the object is allocated using **operator new** from heap.
	
	2.The constructor of the class is invoked to properly initialize this memory

Example program for New operator.

```
#include<iostream>
using namespace std;
class car
{
    string name;
    int num;

    public:
        car(string a, int n)
        {
            cout << "Constructor called" << endl;
            this ->name = a;
            this ->num = n;
        }

        void enter()
        {
```

```
            cin>>name;
            cin>>num;
        }

        void display()
        {
            cout << "Name: " << name << endl;
            cout << "Num: " << num << endl;
        }
};

int main()
{
    car *p = new car("Honda", 2017);
    p->display();
}
```

Q3.Write c++ program to evaluate the variance , standard deviation and mean of N numbers .(Select the values ,function etc .according to your convenience ,also take snapshot of the output and submit)

Soln:-

```
#include<iostream>
#include<math.h>
using namespace std;
int main()
{
        int n,arr[n],ch,i,sum=0;
        float mean = 0.0,variance=0.0,stdeviation=0.0;
        cout<<"how meny number you want to calculate ?\n";
        cin>>n;
        for(i=0;i<n;i++)
        {
                cout<<"enter the no "<<i+1<<endl;
                cin>>arr[i];
        }


                        for(i=0;i<n;i++)
                        {
                                sum +=arr[i];
                        }
                        mean = sum/n;
```

```
                for(i=0;i<n;i++)
                {
                        variance += pow(arr[i] - mean,2);
                }
                variance = variance/n;
                cout<<"variance  = "<<variance<<endl;
                stdeviation = sqrt(variance);
                cout<<"Standerd deviation = "<<stdeviation<<endl;
                cout<<"Mean is = "<<mean<<endl;




        return 0;
}
```