

## **Practical Lecture 5:** Class and Object



# Quick Recap

Let's take a quick recap of previous lecture –

A) Structure

B) Union

C) Enum

D) Functions

# Today's

Today we are going to cover -

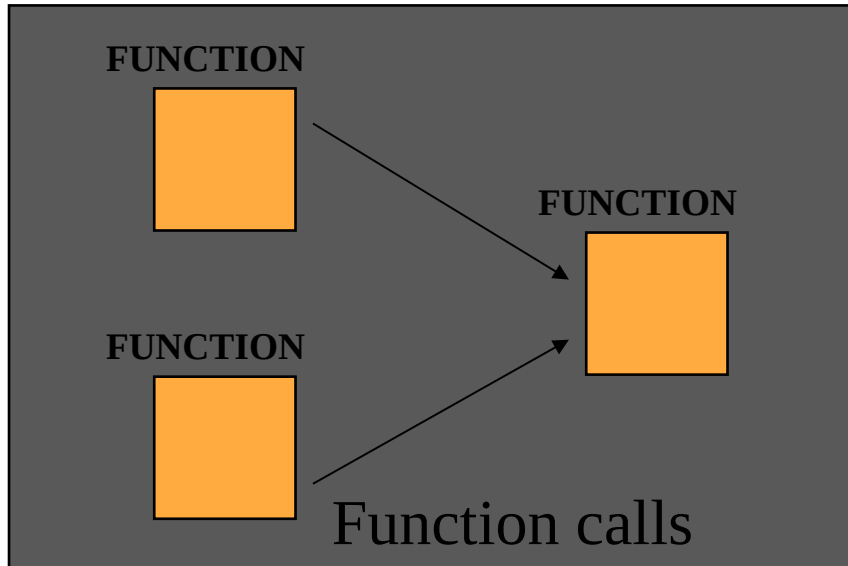
- Class
- Object
- Explaining class and object with example
- Creating class function inside the class.
- Creating Class function Outside the class
- Practice Questions

**Let's Get Started-**

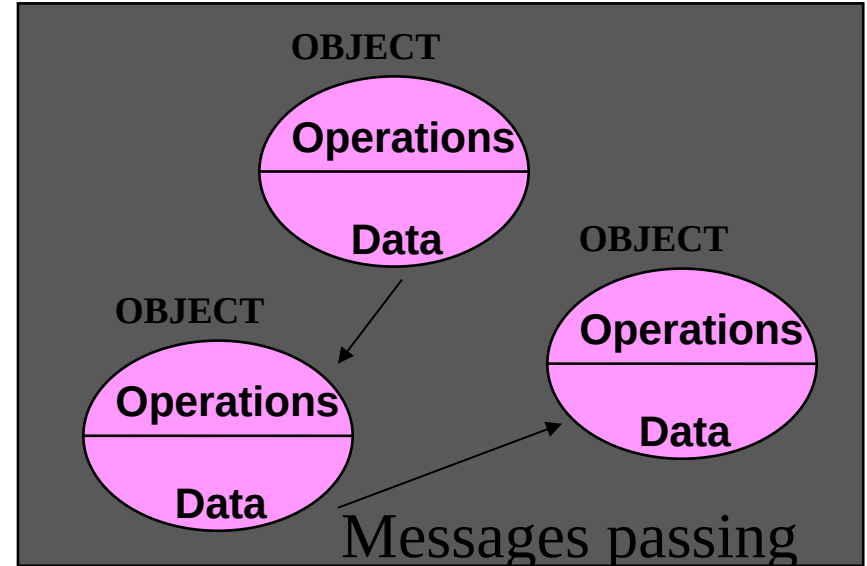
# Review:

## Two Programming Paradigms

### Structural (Procedural) PROGRAM

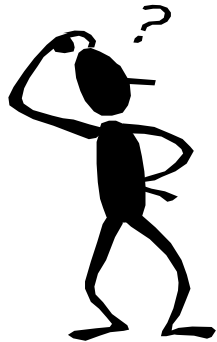


### Object-Oriented PROGRAM

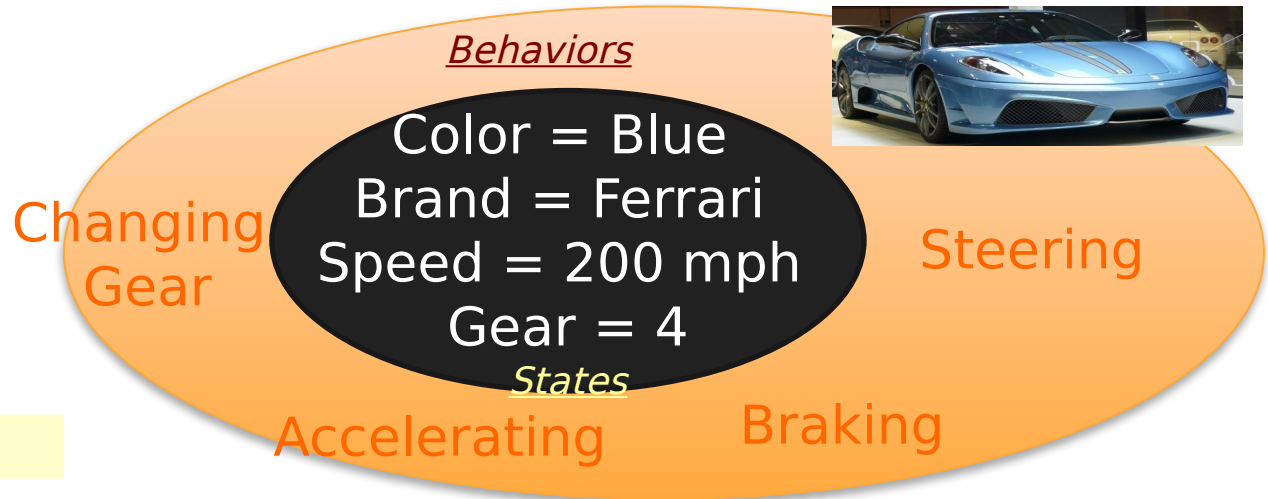


# What is an Object?

- The real world is composed of different kinds of objects:  
**buildings, men, women, dogs, cars, etc.**
- Each object has its own ***states*** and ***behaviors***.



Variables and functions

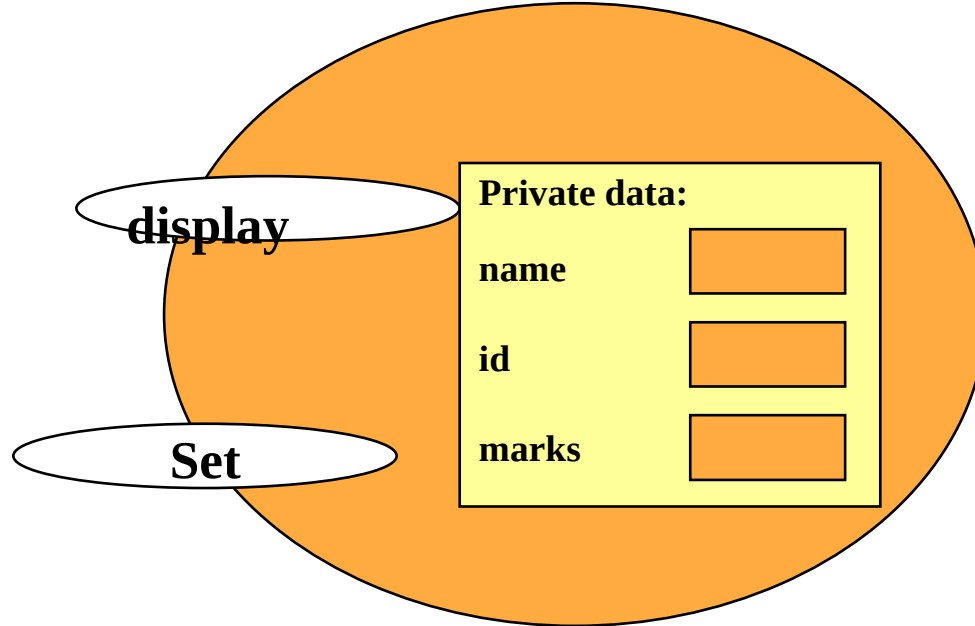


# Object-Oriented Programming-- Introduction to Classes

- Class Definition
- Class Examples
- Objects

# Class Interface Diagram

## student class



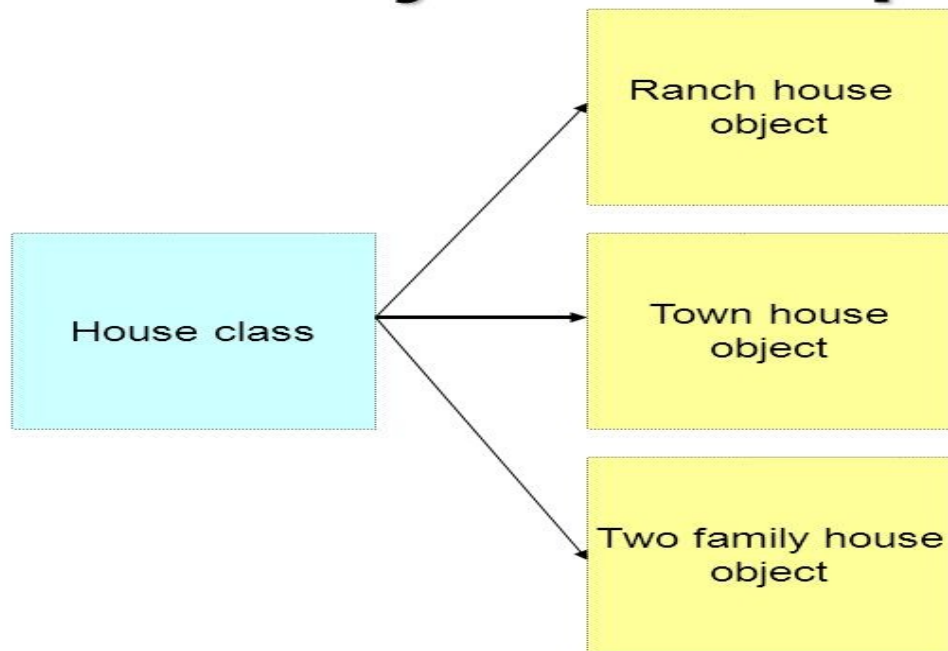


# Class and Object

- **A class** in C++ is the building block, that leads to Object-Oriented programming.
- It is a user-defined data type, which holds its own data members and member functions, which can be accessed and used by creating an instance of that class.
- A C++ class is like a blueprint for an object.
  
- **An Object** is an instance of a Class.
- When a class is defined, no memory is allocated but when it is instantiated (i.e. an object is created) memory is allocated

# Class and Object Example

## Class and Object Example



Each house has windows, doors, floors, etc.

How many of each and what type differentiate each object

# Class and Object example

```
#include <iostream>
#include<string>
using namespace std;
```

```
class Student{ // we are creating class with class keyword
    public:    //Access modifiers
    string studentName; //Data members of the class
    int rollNumber;
    int tutionFess;
};
```

# Class and Object example

```
int main() {
```

```
    Student studentOne; // creating object of student class  
    studentOne.studentName="Vikash";  
    studentOne.rollNumber=55;  
    studentOne.tutionFess=400000.00;
```

```
    cout<<"The student name is"<<"  
    "<<studentOne.studentName<<endl; // endl is used    for the next line  
    cout<<"The student roll number is"<<"  
    "<<studentOne.rollNumber<<endl;  
    cout<<"The student tution fees is"<<"  
    "<<studentOne.tutionFess<<endl;
```

```
}
```

# Class and Object example

## Output

The student name is Vikash

The student roll number is 55

The student tuition fees is 400000

# Creating multiple object for the

```
#include <iostream>
#include<string>
using namespace std;
```

```
class Student{ // we are creating class with class keyword
public:        //Access modifiers
string studentName; //Data members of the class
int rollNumber;
int tutitionFees;
};
```

# Creating multiple object for the

```
int main() {
```

```
    Student studentOne; // creating object of student class  
    studentOne.studentName="Vikash";  
    studentOne.rollNumber=55;  
    studentOne.tutionFees=400000.00;
```

```
    cout<<"The student name is"<<"  
    "<<studentOne.studentName<<endl; // endl is used for the next line  
    cout<<"The student roll number is"<<"  
    "<<studentOne.rollNumber<<endl;  
    cout<<"The student tution fees is"<<"  
    "<<studentOne.tutionFees<<endl;
```

# Creating multiple object for the

```
Student studentTwo; // creating object of student class
studentTwo.studentName="Mukesh";
studentTwo.rollNumber=44;
studentTwo.tutionFees=500000.00;
```

```
    cout<<"The student name is"<<" "<<studentTwo.studentName<<endl;
// endl is used for the next line
    cout<<"The student roll number is"<<"
"<<studentTwo.rollNumber<<endl;
    cout<<"The student tution fees is"<<"
"<<studentTwo.tutionFees<<endl;
```

```
}
```



# Output

The student name is Vikash  
The student roll number is 55  
The student tuition fees is 400000

The student name is Mukesh  
The student roll number is 44  
The student tuition fees is 500000

# Creating Function Inside the class

```
class Student{ // we are creating class with class keyword
public:        //Access modifiers
string studentName; //Data members of the class
int rollNumber;
int tutitionFees;

void studentInfoDisplay(){
    cout<<"The student name is"<<" "<<studentName<<endl; // endl is
used for the next line
    cout<<"The student roll number is"<<" "<<rollNumber<<endl;
    cout<<"The student tutition fees is"<<" "<<tutionFees<<endl;

}
};
```

# Creating Function inside the class

```
int main() {
```

```
    Student studentOne; // creating object of student class
```

```
    studentOne.studentName="Vikash";
```

```
    studentOne.rollNumber=55;
```

```
    studentOne.tutionFees=400000.00;
```

```
    studentOne.studentInfoDisplay();
```

```
}
```

# Creating function outside the

```
#include <iostream>
#include<string>
using namespace std;
```

```
class Student{ // we are creating class with class keyword
public:        //Access modifiers
string studentName; //Data members of the class
int rollNumber;
int tutioFees;

    void studentInfoDisplay();
};
```

# Creating function outside the

```
void Student :: studentInfoDisplay(){ // methods defined outside the class
```

```
    cout<<"The student name is"<<"  
    "<<studentName<<endl; // endl is used for the next line  
    cout<<"The student roll number is"<<" "<<rollNumber<<endl;  
    cout<<"The student tution fees is"<<" "<<tutionFees<<endl;  
  
}
```

# Creating function outside the

```
int main() {
```

```
    Student studentOne; // creating object of student class
```

```
    studentOne.studentName="Vikash";  
    studentOne.rollNumber=55;  
    studentOne.tutionFees=400000.00;
```

```
    studentOne.studentInfoDisplay();
```

```
}
```













Any  
Questions ??

# Thank You!

**See you guys in next class.**