

C++ Programming: Part 2

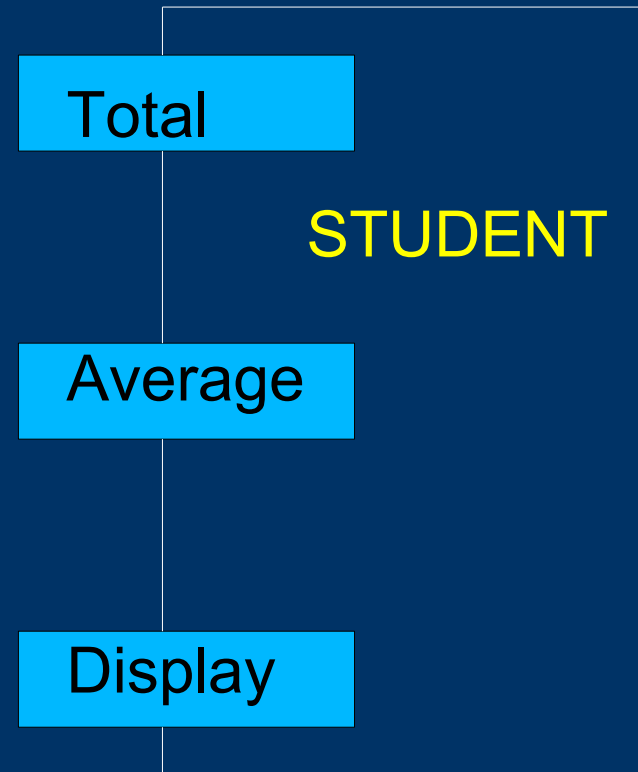
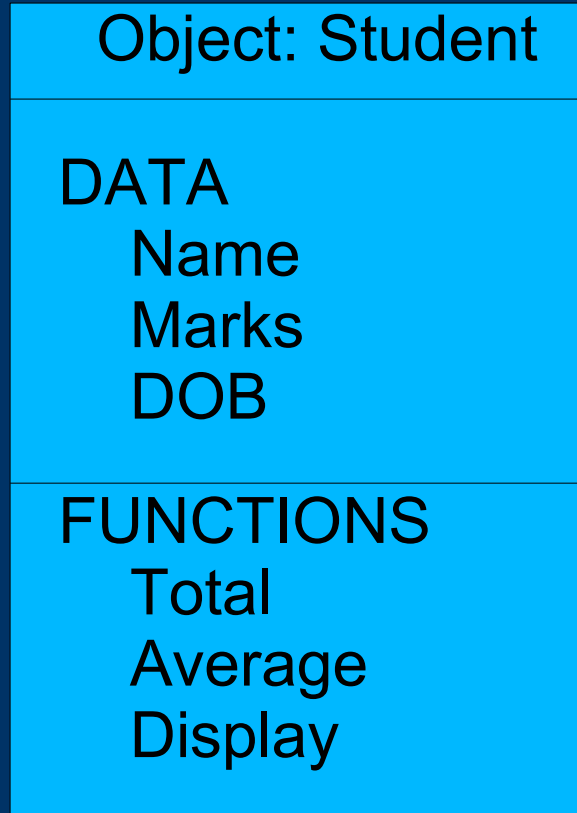
Vipin Bhatnagar,
Department of Physics



Objects

- Basic runtime entities in an OO system
 - Eg: any data which a program must handle
 - Represent a person, a bank, a table, a vector, list, etc.
- Programming problem is analyzed in terms of objects and the way in which they communicate
- Objects should be chosen to match the real world objects.
- Objects take space in memory (at runtime), so have addresses.

eg. customer and account are two objects which communicate at runtime to get bank balance



Classes

- A Class is a collection of Objects of similar type
- Or Objects are variables of type class

eg.

mango, apple, oranges are members of the class fruit.

In C++ syntax: (if fruit is a class)

```
fruit guava;
```

will create an object guava belonging to the class fruit

C++: How to write programs?

- Must Haves:
 - A Computer with a C++ compiler: g++, cpp, c++
 - An editor to create/edit C++ program file: emacs, etc.
 - Lots of patience!
 - We have:
 - PCs with LINUX OS
 - g++ “free” C plus-plus compiler from GNU
 - Procedure (in a shell window):
 - Create a c++ program (copy from book!): file.C
 - Run the compiler on it to get the executable: **file**
 - Command: *g++ -o file file.C*
 - Run the program: *./file* (if no errors in previous step)
-
-

First Program: Let's Go!

```
#include <iostream.h> // comment
int main()
{
    cout << "My First C++ program";
    return(0);
}
```

- Line 1: include directive to include header file
 - Line 2: a must have function in all C++: main
 - Line 3: { and } the body of the function
 - Line 4: using an inbuilt object “cout” and << operator
 - Line 5: on successful completion return “0” to OS
-
-

Face to Face with a C++ Program!

```
#include <iostream.h>
class MSc // new data type
{
    char name[30];
    int age;
public:
    void getData(void);
    void dispData(void);
};

void MSc::getData(void) //member fn
{
    cout << "Enter name: ";
```

contd..

```
    cin >> name;
    cout << "Enter age: ";
    cin >> age;
}
void MSc::dispData(void) //member fn
{
    cout << "\nName: " << name;
    cout << "\nAge: " << age;
}
int main()
{
    MSc student; //object of type MSc
    student.getData();
    student.dispData();
    return(0);
}
```

Welcome to the World of C++!

More C++ will follow now....

