Static Members

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Agenda

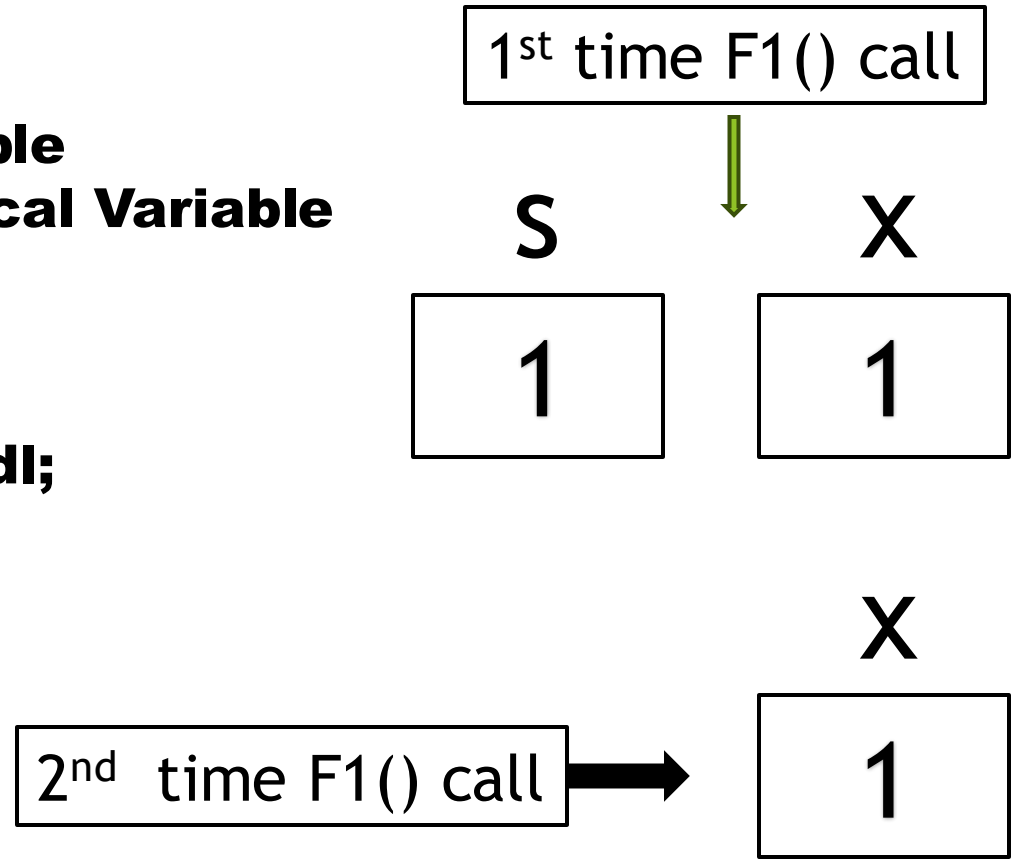
- Static Keyword
- Static Local Variables
- Public Static Member Variables
- Private Static Member Variables
- Static Member Functions

Static Keyword

- **In C++ , static keyword can be used in the following places :**
  - **Static Local Variables → C/C++**
  - **Static Member Variables → C++**
  - **Static Member Functions → C++**

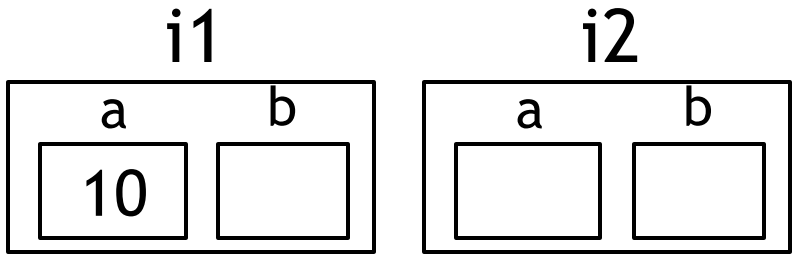
Static Local Variables

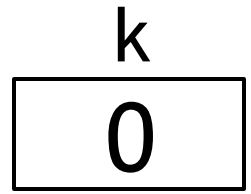
```
void F1()
{
    int x = 0; // Local Variable
    static int s; // Static Local Variable
    x++;
    s++;
    cout<<"x = "<<x;
    cout<<",  s = "<<s<<endl;
}

int main()
{
    F1();
    F1();
    return 0;
}
```



Public Static Member Variables

```
class Item
{
    public:
        int a, b; // Instance Member variable
        static int k; //Static Member variable
}; int Item::k=0;
int main()
{
    Item i1,i2;
    i1.a = 10;
    return 0;
}
```





Static Variable can Access 2 ways

1. objectName.staticVariable;
2. ClassName::staticVariable;

- **static member variable needs to define outside the class body.**

datatype className: : staticVariable;

- **There is only one copy of static member variable in the memory for entire class**
- **static member variables do not belongs to the object of class, but object can access static member variable using dot operator**

objectName.Static Member Variable;

static member variable == class variable

Private Static Member Variables

```
class Item
{
    private:
        int a, b; // Instance Member
variable
        static int k; //Static Member
variable
};
int Item::k=10;

int main()
{
    Item i1,i2;
    cout<<i1.k; // Error
    cout<<Item::k; // Error
    return 0;
}
```

Static Member Functions

- **static member function are qualified with the keyword static.**
- **non member function can never be static**
- **static member function can only access static members of the class.**

Syntax

```
Static ReturnType
FunctionName()     {
    code;
    code;
}
```

```
class Item
{
    private:
        int a, b; // Instance Member variable
        static int k; //Static Member variable
    public:
        static void setK(int z) {k = z;}
        static int getK()   {return k;}
};
int Item::k=0;

int main()
{
    Item i1,i2;
    //cout<<i1.k; // Error
    //cout<<Item::k; // Error
    Item::setK(50);
    cout<<Item::getK();
    return 0;
}
```