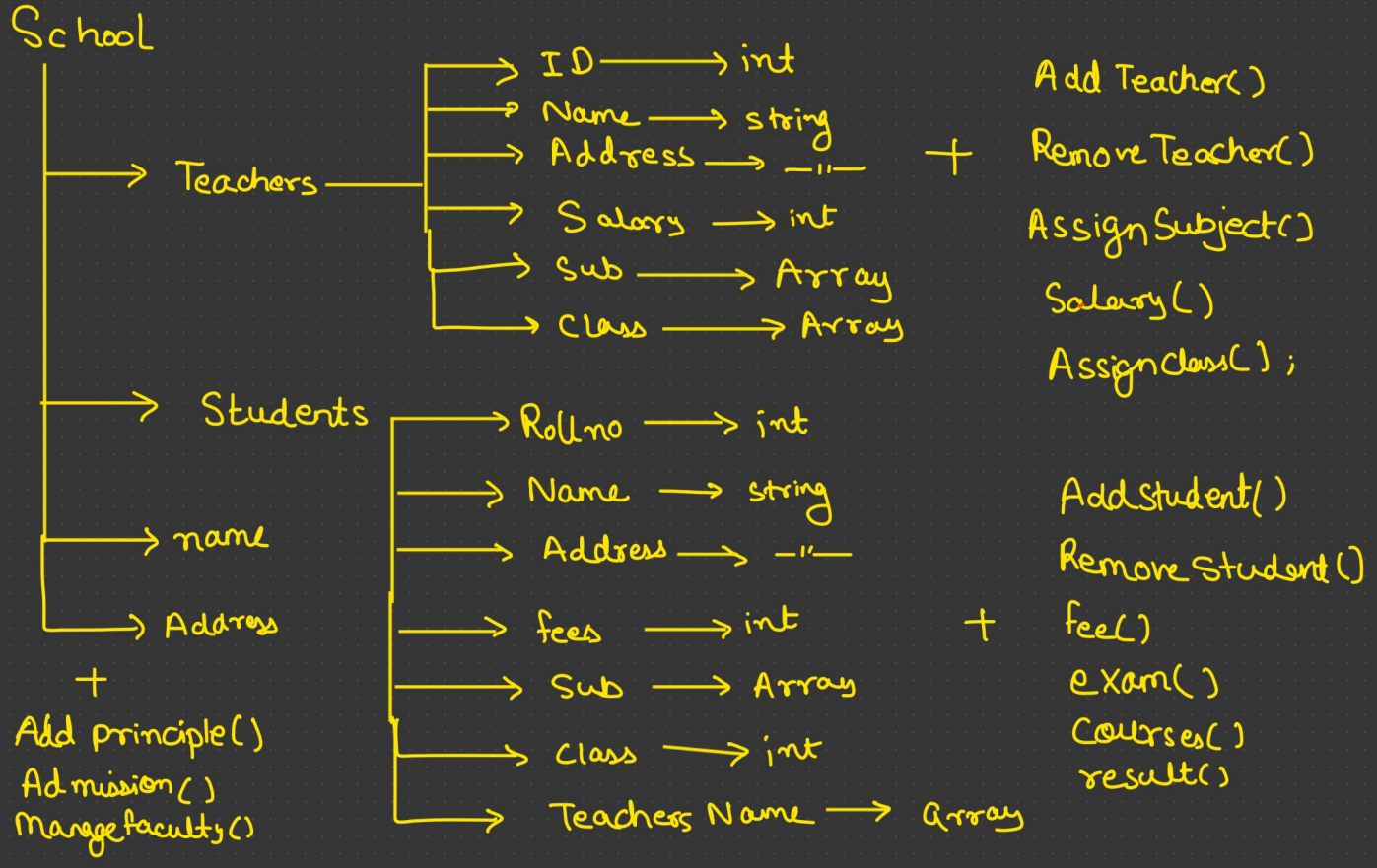
Introduction to C++

- 1970 → structured programming.
- 1980 → Object oriented programming. → C++, Small talk., Simula

- C++ was developed by Bjarne Stroustrup at Bell Lab's USA. in 1980s.

C++ has 3 seperate programming concept :-

1) Procedural language, represented by C.
2) Objed Oriented Programming. (OOPs concept).
3) Generic Programming. (Template)



main() Headers :-

main()	void main()	int main()	main()	int main(void)
{	{	{	{	{
}	}	return 0;	return 0;	return 0;
		}	}	}
✓	✗ (may be)	✓	✓	✓

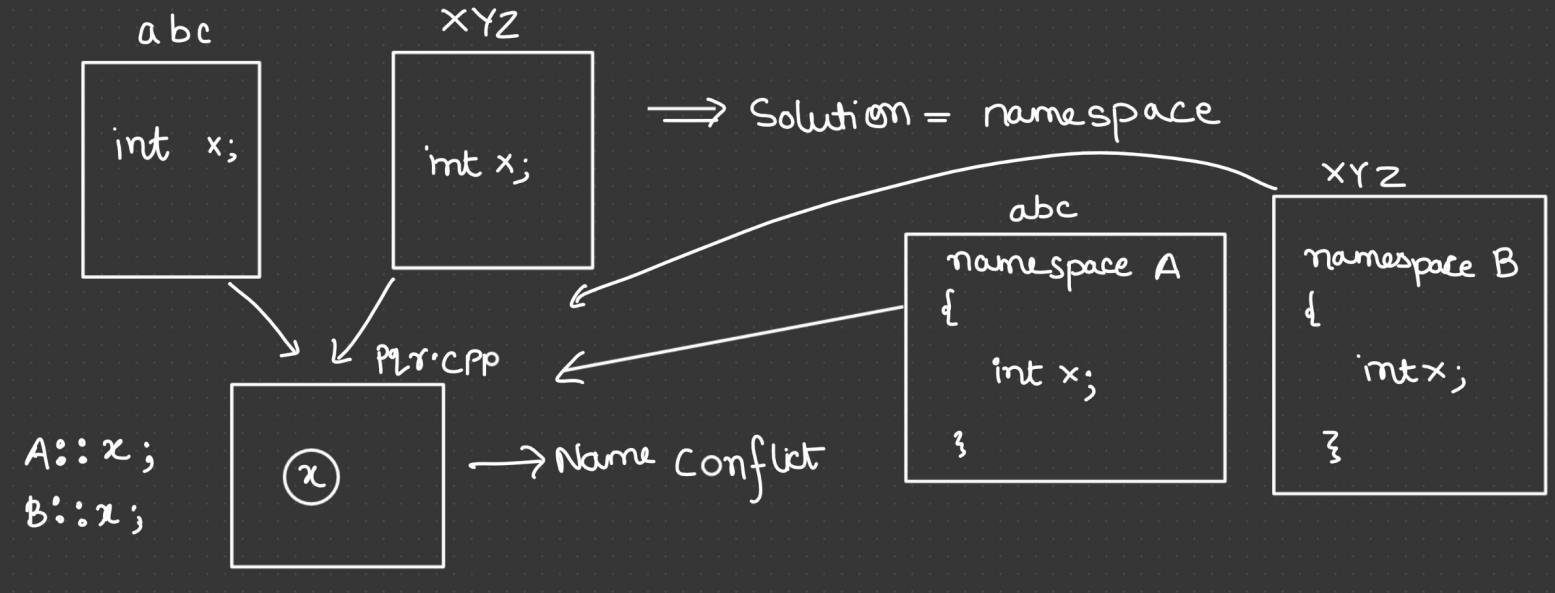
↓

C++ compiler implicitly adds return 0;

#include <iostream.h> ⟶ error = No such directory found

abc.c	abc.cpp
xyz.h	xyz.h

#include<iostream> ✓
#include<math.h> ✓
#include<cmath> ✓



```
A::func();
B::func();
```

iostream ⟶ input/output stream

```
namespace std
{
   cout
   cin
}
```

object + operator ⟶ input / output

std::cout
std::cin

⟶ operator overloading

<< ⇒ insertion operator
>> ⇒ extraction operator

cout + << ⇒ output
cin + >> ⇒ input

Syntax :—

```
std::cout<<"Hello prateek";

std::cin>>x;
```

Ways to use namespace :—

① `std::cout<<"Hi";`

② `using std::cout;`
`cout<<"Hi";`

③ `using namespace std;`
`cout<<"Hi";`

```
#include<iostream>
using namespace std;        → using directives

namespace A
{
   int x;          // namespace variable
}

int x=10;          // Global variable

int main()
{
  int x=5; // Local variable

   Cout<< x;   → local print

   Cout<< ::x; → Global print

   Cout << A::x ; → namespace print

   return 0;

  }
```

5 min Break.

```
namespace A
{
  int x;
}
namespace A
{
    int y;
}

using namespace A;
using namespace std;
```

Allowed

```
int main()
{
   Cout<< x;
   return 0;
}
```

```
namespace A
{
   int x;
   int y;
}
namespace A
{
   int y;
   int z;
}
```

Not Allowed

Nested Namespace :-

```
namespace A
{
    int x;
    namespace B
    {
        int y;
    }
}
```

```
int main()
{
    cout << A::x;
    cout << B::y; → error
    cout << A::B::y;
    return 0;
}
```

```
using namespace A;
using namespace B;
using namespace A::B;
```

} All Allowed

Alias of Namespace :-

```
namespace prateek_jain_namespace
{
    int x;
}
```

```
namespace pjn = prateek_jain_namespace;
```

```
cout << pjn::x;
```

```
namespace A
{
    int x = 10;
    namespace B
    {
      int y = 5;
    }
}
```

```
namespace C = A::B;
```

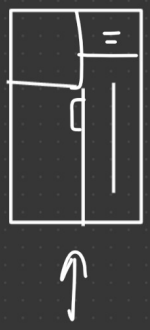
```
int main()
{
  cout << C::y;
   return 0;
}
```

Unamed namespace :-

```
namespace
{
  int x = 5;
}
int main()
{
  cout<< x;
   return 0;
}
```

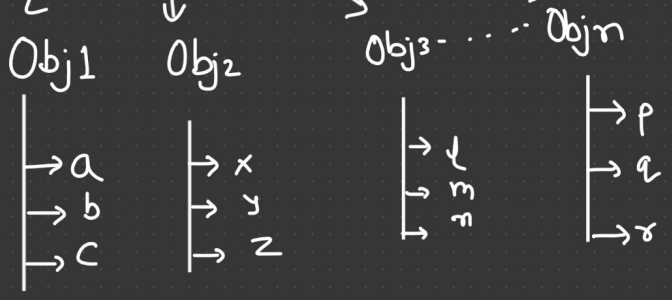
⚠ you can't use names for unnamed namespace in a file other than the one that contains the namespace declaration.

Objects and classes



Real entity

Blue print of Object



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