

# PFI lecture Scope

- A scope is a region of program text.
- The main purpose of scope is to keep names local, so they do not interfere (or clash) with names declared elsewhere.
- A name (a variable for instance) is declared in a scope and is valid from the point of its declaration until the end of scope in which it is declared.

# PFI lecture scope categories

- The global scope
- A Local scope between {...} and function argument list
- A statement scope: e.g. in a for loop
- A Class scope
- A Namespace

# PFI lecture Scope examples

- The global scope.
- The content of the source code file:

```
int x;    // x is in the global scope
void set(){ // set, function name, global scope
    x=7;   // use global scope x
}
int main() { // main, function name, global
    x = 1; // use global scope x
    set(); // use global scope set
    return 0;
}
```

# PFI lecture Scope examples

- A local scope concept and examples
- The content of the source code file:

```
int x; // x is in the global scope
void set(){
    x=7; // use global scope x
    int x=0; // declare and define local x
    x=x+1; // use local x
}
int main() {
    set(); // use global scope set
    cout << x << endl;
    int x = 10; // a local in the main block
    {
        x = 20;
        int x = 100; // a local in the immediate preceding { } block
        x = x + 1;
    }
    cout << x << endl;
    return 0;
}
```

# PFI lecture Scope examples

- A statement scope concept and examples
- The content of the source code file:

```
int main() {  
    int i = 7;  
    for (int i = 0; i<4; i=i+1) // outer "for" scope i  
    {  
        for (int i = 0; i<4; i=i+1) // inner i  
            cout << i << ' '; // inner i  
        cout << i << ' '; // outer "for" scope i  
        cout << endl;  
    }  
    cout << i << endl; // main function i  
    return 0;  
}
```

# PFI lecture Scope examples

- A statement scope concept and examples
- The content of the source code file:

```
int main() {  
    for (int i = 0; i<4; i=i+1)  
    {  
        for (int j = 0; j<4; j=j+1)  
            cout << j << ' '  
        cout << j << endl;    // compiler error  
    }  
    cout << i << endl;    // compiler error  
    return 0;  
}
```

# PFI lecture Scope examples

- A function argument list scope concept and examples
- The content of the source code file:

```
int h(int x){  
    cout << x << endl;  
    x = x + 1;  
    //int x = 0; uncomment will result error  
    return x;  
}  
  
int main() {  
    int x = 20;  
    cout << h(x) << endl;  
    return 0;  
}
```