

School Of Engineering Programming Club

Week 1

C++ Revision

- Data types
- Input & output
- Hello, World!
- If statement
- For & while loops
- Arrays
- Functions
- Question

Data types

- int
- float / double
- char
- bool
- string

```
type variable_name;
```

```
type variable_name = value;
```

Input & output

- Input : cin
- Output : cout

```
cin >> variable_name;
```

```
cout << variable_name;
```

Hello, World!

```
1 #include <iostream>
2 using namespace std;
3
4 int main()
5 {
6     cout << "Hello, World!";
7 }
8
```



   Output

Hello, World!

If statement

```
1  #include <iostream>
2  using namespace std;
3
4  int main()
5  {
6      int n=5;
7      if (n > 3) {
8          cout << "Greater than 3";
9      }
10     else if (n == 3){
11         cout << "Equals 3";
12     }
13     else {
14         cout << "Smaller than 3";
15     }
16 }
17
```

● ● ● Output

Greater than 3

For loop

```
1  #include <iostream>
2  using namespace std;
3
4  int main()
5  {
6      for (int i=0; i<7; i++){
7          cout << i << endl;
8      }
9  }
10
```

● ● ● Output

0
1
2
3
4
5
6


```
1  #include <iostream>
2  using namespace std;
3
4  int main()
5  {
6      for (int i=0; i<7; i++){
7          cout << i << endl;
8      }
9      cout << i<< endl;
10 }
11
```

source_file.cpp:9:11: error: 'i' was not declared in this scope

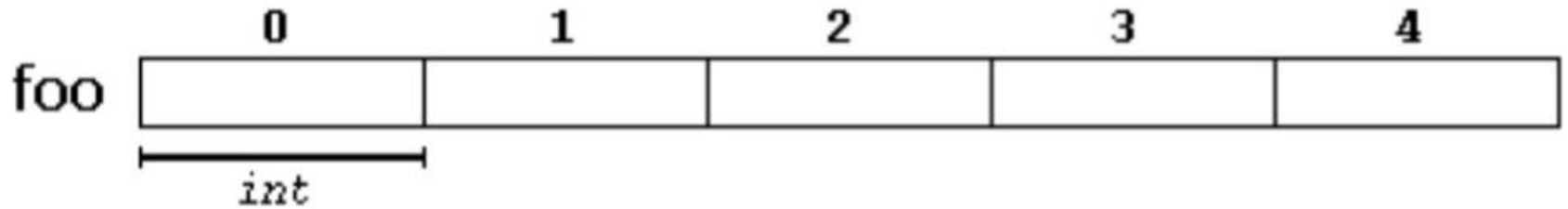
While loop

```
1  #include <iostream>
2  using namespace std;
3
4  int main()
5  {
6      int a=5 ;
7      while (a>0){
8          a--;
9          cout << a << "\n";
10     }
11 }
12
```

 Output

4
3
2
1
0

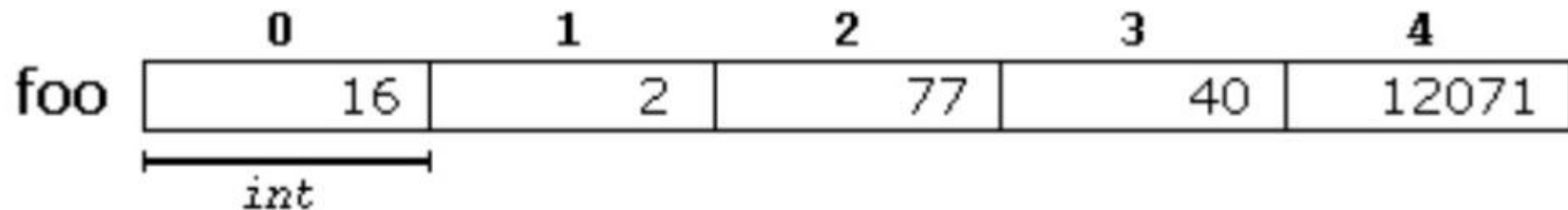
Arrays



```
int foo [5];
```

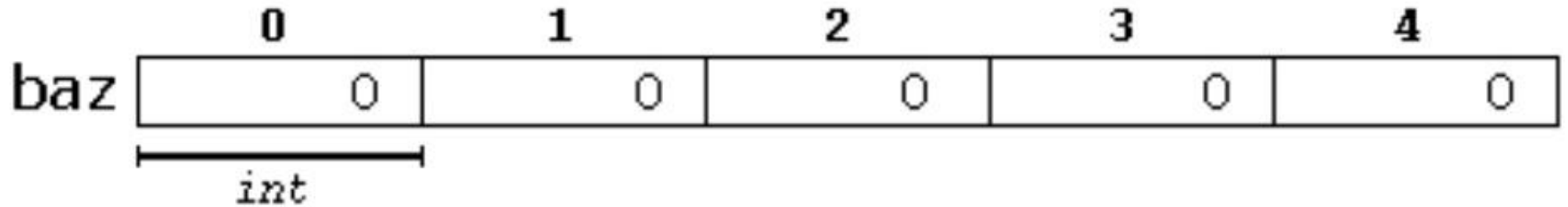
Arrays

```
int foo [5] = { 16, 2, 77, 40, 12071 };
```



Arrays

```
int baz [5] = { };
```



Arrays

```
1 // arrays example
2 #include <iostream>
3 using namespace std;
4
5 int foo [] = {16, 2, 77, 40, 12071};
6 int n, result=0;
7
8 int main ()
9 {
10     for ( n=0 ; n<5 ; ++n )
11     {
12         result += foo[n];
13     }
14     cout << result;
15     return 0;
16 }
```

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Arrays

```
int jimmy [3][5];
```

		0	1	2	3	4
jimmy {	0					
	1					
	2					

jimmy [1][2];

Functions

```
1 // arrays as parameters
2 #include <iostream>
3 using namespace std;
4
5 void printarray (int arg[], int length) {
6     for (int n=0; n<length; ++n)
7         cout << arg[n] << ' ';
8     cout << '\n';
9 }
10
11 int main ()
12 {
13     int firstarray[] = {5, 10, 15};
14     int secondarray[] = {2, 4, 6, 8, 10};
15     printarray (firstarray,3);
16     printarray (secondarray,5);
17 }
```

```
5 10 15
2 4 6 8 10
```


Question

Ann has recently started commuting by subway. We know that a one ride subway ticket costs a dollars. Besides, Ann found out that she can buy a special ticket for m rides (she can buy it several times). It costs b rubles. Ann did the math; she will need to use subway n times. Help Ann, tell her what is the minimum sum of money she will have to spend to make n rides?

Example :

Input : $6\ 2\ 1\ 2$

Output : 6

Solution

```
#include <iostream>

using namespace std;

int main() {
    int n,m,a,b;
    cin>>n>>m>>a>>b;
    int group = n/m;
    int group_price = group * b;
    int result =0;
    if (group_price <= group*m*a) {
        result = group_price;
        result = result+min(b , (n-group*m) *a);
    }
    else {
        result = n*a;
    }
    cout<<result;
}
```