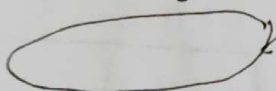


```
#include <iostream>
using namespace std;
int main () {
    cout << "Ami Naymul" << endl;
}
```

output:

Ami Naymul



→ New line

⑧ endl; is used to terminate statements.

Data type! Different types of data to be stored in memory. Eg - integer, float, character, double etc.

Eg - int! stores integers like - 5, 0, 8 etc.

char! single character like - 'a', 't', '\$', '7' etc.

float! Floating point values like! - 2.014, 1.0000, 6.7800 etc.

Different types of data types use different amounts of memory. Amount of memory use also depends

on the architecture of your CPU.

Data type	- Meaning	- size (in bytes)
int	integer	2 or 4
float	Floating-point	4
double	Double-float- - point	8
char	character	1
wchar_t	wide character	2
bool	Boolean	1
void	Empty	0

Character: A 1-byte (= 8 bits) data type that takes 1 character.

Ch char ch = 'a';



Boolean: True/False. Take 1 bit and 1: True  
0: False

bool is good = 1;

bool is bad = false;

Float/Double Float takes 4/8 bytes

Double takes 8 bytes.

float num1 = 1.2;

double num2 = 2.4;

variable naming / nomenclature

- ① can contain alphabets, numbers and underscores.
- ② cannot start with a number.
- ③ cannot be keywords like int, cout, double, bool, etc.
- ④ case sensitive
- ⑤ cannot contain special symbol like %, \$, !, #, etc.

Warning! Don't use same variable name multiple times.

Using different data types in code!

```
#include <iostream>
using namespace std;
int main() {
    int a = 123;
    cout << a << endl;
    char b = 'v';
    cout << b << endl;
    bool bl = true;
    cout << bl << endl;
    float f = 1.2;
    cout << f << endl;
    double d = 1.23;
    cout << d << endl;
}
```

output!

123

v

1

1.2

1.23

⇒ check the size of different data types for your system using `sizeof(variable-name)`;

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

```
int main () {
```

```
    int a = 4
```

```
    double b = 1.90;
```

```
    char c = '+';
```

```
    int sizeInteger = sizeof(a), sizeofdouble = sizeof(b),
```

```
    sizechar = sizeof(c);
```

```
    cout << "size of an integer is " << sizeInteger << endl;
```

```
    cout << "size of a double is " << sizeofdouble << endl;
```

```
    cout << "size of char is " << sizechar << endl;
```

```
}
```

output!

Size of an Integer is 4

Size of a double is 8

Size of char is 1



How data stored in memory?

Eg! `int a = 8;` // int takes 4 bytes = 32 bits.

In binary,  $8 = 1000$  (4 bits needed)

∴ int a

00000000 00000000 00000000 00010000 } 32 bits

Eg! `int b = 5`

<sup>b</sup>  
5 4 bytes

address = 1000 (assume)

100, 101, 102, 103

4 bytes are consumed.

Eg! `char c = 'a';`

Characters are mapped to the standard ASCII values.

'a' → 97

'b' → 98

'c' → 99

⋮  
'z' → 122

'A' → 65

'B' → 66

'C' → 67

'D' → 68

⋮  
'Z' → 90

char c = 'a';

ASCII → 97  $\xrightarrow{\text{Binary}}$  1100001  $\xrightarrow{\text{Store}}$

0110001  
1 byte