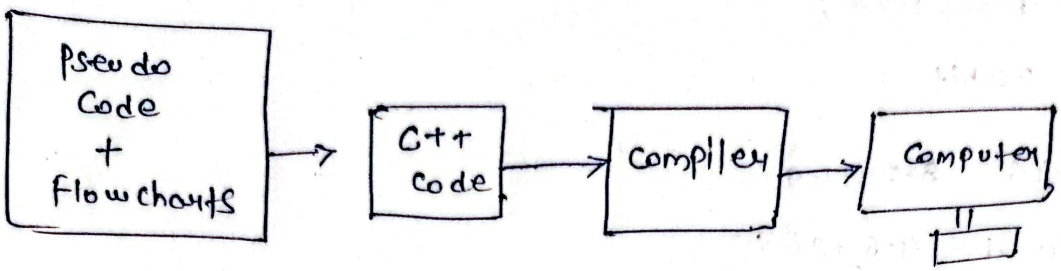
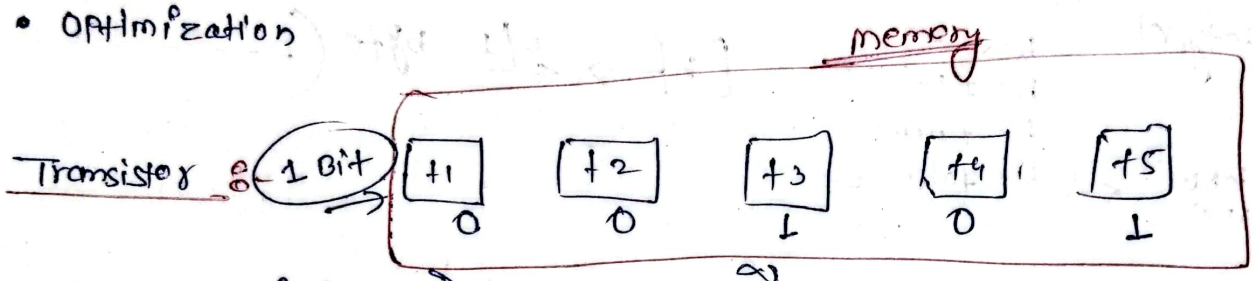
Lec-3 Computer memory unit 18-09-2024



Compiler do :-

- Code error
- Optimization



let 5 को store करना है —

2	5	R
2	2	1
1	0	

⇒ 101

1 Bit = Binary digit (0/1)

8 bit = 1 byte

(2^{10}) ⇒ 1024 byte = 1 kb

1024 kb = 1 MB

1024 MB = 1 GB

2^{10} GB = 1 TB

2^{10} TB = 1 PB

A = 65 → 1000001 → Transistor ✓

C = 66 → ?? → Transistor ✓

D = 67

Z = 90

a = 97

b = 98 - - z = 122

ASCII Code Table

+ → 43

− → 45

(1) 4 = 100 → Transistor

10 = 1010 → "

A = ? → ??
??

Ctrl + Alt + N

① First code in CPP

```cpp
#include<iostream>
int main ( )
{
   std :: cout << "Hello C++ " ;
}
```

```cpp
int main ( )     ← Start
{
   // code
}                ← End
```

②

```cpp
#include<iostream>
using namespace std;
int main() {
    cout << "Welcome to the world of C++ ";
    return 0;
}
```

Variables & Data Types

- int → 1, 2, 3, 0 ← 4 bytes
- float → 1.2, 4.8 ← 4 bytes
- double → 1.234, 2.685 ← 8 byte
- boolean → 1 (true) / 0 (false) ← 1 byte
- long int → ✓ 16 byte

int name = 10;

↳ 4 byte
⇒ 4×8 bit = 32 bit

① 0 0 0 0 0 1 0 1 0 ㉜

→ 10 → (1010) → Binary

char c = 'a' ✓ → 97 → 01100001

- 'A' ✓
- 'B' ✓
- '1' ✓
- '010' ✓
- '%' ✓
- '+' ✓

(char ↑ data type; c ↑ var Name)

char a1 = 'AB' ✗ Not allowed ✗

char b1 = 'a' ✓ allowed ✓

(char → data type; b1 → Variable Name; 'a' → Value)

③ Float 1.2, 4.6, 2.3 . . . 1.20 (F) = 0 1 0 1 0 0 0 1 1 . . . 32

float f = 1.20 ;

4 byte ⇒ 4×8 = 32 bit

④ double 4.6346 8.23149

double d = 4.632893

d

⑧ boolean

↓

datatype

b = (0, 1)

b = 0 ↵

b = 1 ↵

b = true ↵

Variable Name ← (b) = false ↵

b → 0/1 byte (- - - - - - - - 1) ↵

Let's store (-2) → in memory

-2 ⇒ 10 (Binary)

0 1 0

1's comp = 1 0 1

2's comp = + 1

1 1 0 ← (-2)

Negative sign →

1 1 0

1's 0 0 1

2's + 1

0 (1 0) → 2