

Day 3:-

Mon	Tue	Wed	Thu	Fri	Sat	Sun

"Start C++ from zero and Write Your First Program."

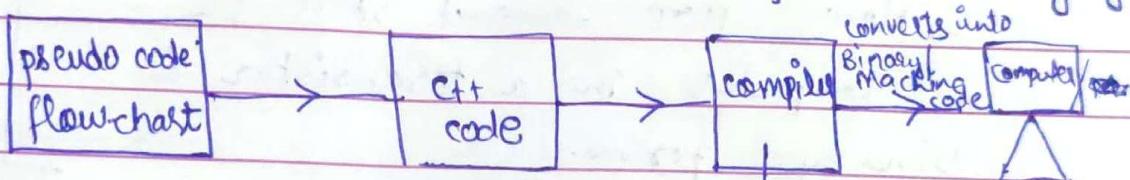
Date:

Day 3:-

Computer Memory Unit

→ Abi tk meny yehi smja that k mery pass jo b problem, ma oska understand kik oska flow chart bandaagi ta k oska solve kiskon and oska pseudo code b likhs kono

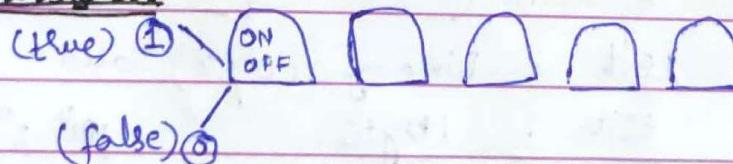
→ Ab ye code tu pseudo code code ya flow chart hai so isklye ab mai isko yani pseudocode ko C++ ya k b language mai code krk compiler k through computer ko bejdungi and compiler isko 0,1 form mai convert krk computer ko bejdga.



→ And mera sala data transistors k and store yehi hai.

- convert code into binary form
- code error
- optimization

Transistors



Example:- Hello Numbers store in binary form in transistors, let say mujy '5' ko transistor k and store kerna hai.

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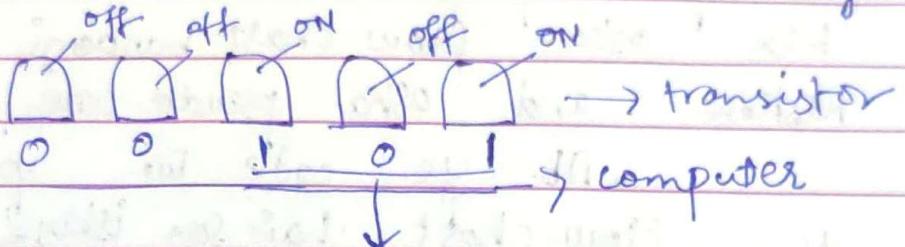
$$\begin{array}{r}
 \times 2 \\
 2 \quad 5 \\
 \hline
 4 \\
 \hline
 2 \quad 2 \\
 \hline
 0 \quad 1 \downarrow
 \end{array}
 \quad
 \begin{array}{r}
 \checkmark \\
 2 \quad 5 \\
 \hline
 2 \quad 2 \\
 \hline
 0 \quad 1 \downarrow
 \end{array}$$

→ 5

converts into binary 101

• $5 = 101 \rightarrow$ Transistor.

How 101 stores 5 in computer in a transistor in binary form



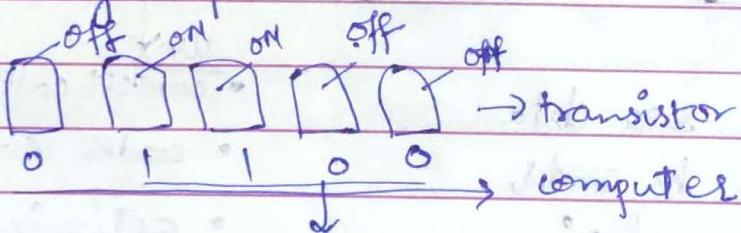
binary form of 5 which is 101

→ 12

converts into binary form

1100

→ How 1100 convert store 12 in computer in a transistor in binary form.



$$\begin{array}{r}
 2 \quad 12 \\
 2 \quad 6 - 0 \uparrow \\
 2 \quad 3 - 0 \\
 2 \quad 1 - 1 \\
 0 - 1
 \end{array}$$

1100

binary form of 12 which is 1100.

→ 1 transistor = 1 Bit (stores 0 | 1)

1 Bit = Binary (0 / 1) and 1 byte = 8 bits

8 Bits = 1 byte

1 Bit 2^{10} 2^{10} 2^{10}
1 0 1 1 0 0 1 0 2^{10}

• (2^{10}) 1024 bytes = 1 KB

• (2^{10}) 1024 kB = 1 MB

• (2^{10}) 1024 MB = 1 GB

• (2^{10}) 1024 GB = 1 TB

• (2^{10}) 1024 TB = 1 PB

→ Lekin let say agr mujy A, B, C, Dne
 ya !, = , @ ya iss tr haw ka
 kuch b hogya tuo hum ose sbko
 binary form mai kesy convert kriggy.
 Tuo oskly humay inn sbko + 1
 special NO. dedka jo humay kahar puri
 dmyor we krigi. jo osklye. [ASCII table]
 let say. A → 65 (decimal no)
 B → 66 .
 C → 67 .

→ Russia sends message to USA.

• Russia sends successfully to USA

(A → 65) → (A → 65)

→ Ab let say, Agr hr country mai different
 nos hoty and ASCII table na hota tuo
 dono countries correct way mai humsy
 communicate na kerpaty.
Something like this:

• Russia | NOT sent successfully to USA

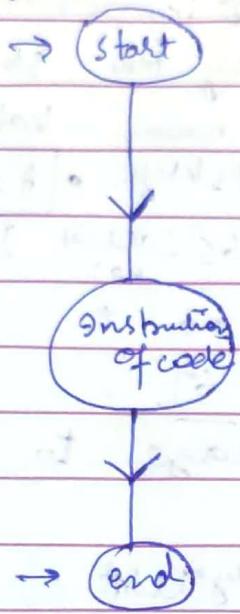
(A → 65)

send 65 to USA → 65 → USA understands
 A to '23' so
 reject 65 X.

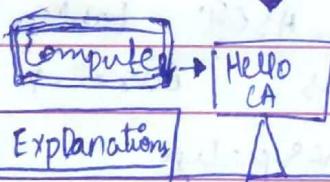
→ That'sy why ASCII table invents
 who uses whole world.

→ Write first code in C++?

- flow-chart structures



- "\n", << endl (for next line)
- "<<" called insertion operator



cout Explanations

cout << "Hello"
→ Hello
→ Ab agar meny cout k
andr kuch b string k and
likha hai tu, same whi
result print hogya.

→ cout << 2+3
→ 5
→ cout << i+1
→ 1+1
→ perform horahai hoi tu
output ayyga

• takai mujy
std box
box now likhna pry.

osklye mai using namespace
std) include krongto

Kesy fis chez ko
understand, kerta
hai kisko console
per print kerna
hai.

so mai header file include
krongto. (#include <iostream>)

- C++ Structure:

Code 1
+ → int main()

{
Instruction of code
} → end

Code 2

#include <iostream>
int main {
header file

std::cout << "Hello CA";
Means? } ; → end
→ computer ko kesy pata
chalyga, what is this?
so include at
top.

Code 3:

#include <iostream>
using namespace std;

int main()

std::cout << "Hello" (A);

std::cout << "Hello Noo!";

std::cin >> "

MINDFUL
NOTES

→ My First Program.
Done on VB-code

Variables and datatypes → datatypes

→ Normal Languages:

1- char: a, b, c,

2- Number: 1, 2, 3, 4, 5

3- Word: How are you.

: Yes or No (gesture)

→ computer language

1- (Number) → INT : 1, 2, 3, 10

2- Float : 1.2, 2.8, 3.68

3- double : 2.685, 9.234

4- Boolean : '1' or '0'

5- (Word) → String : "How are you".
stores 4 bytes

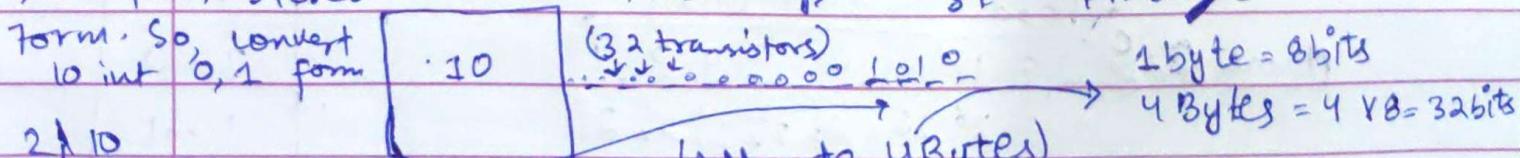
1) Int Name = 10

↓ ↓ → assignment operation

data type Variable (means 10 is name
variable & ands

→ computer stores value in 0, 1 (binary) store 2x do).

Form: So convert
10 int 0, 1 form



2) 10

2 5 - 0

2 2 - 1

2 1 - 0

0 - 1

1010

ags 4 bits e thi

two 32 bit read
R & R?

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0 0 0 0 0 0 0 0 0 1 0 1 0 Humny + standard
 $2^{32} 2^{31} 2^{30} \dots$ $2^3 2^2 2^1 2^0$ size char jo hum
Name $= 1 \times 2^3 + 0 \times 2^2 + 1 \times 2^1 + 0 \times 2^0$ baby 3b
(askeye $= 8 + 0 + 2 + 0$ use krskty
dairg ty $= 10$ hair.
ky esary
1 variable
mai store
hoyein or
hmaly compiler last, to make answer correct.
ko pata chaliye k humy konky marseko read keena hai.]

(2) Char Name \rightarrow stores 1 byte

↳ Variable ✓

Char must be . (Alpha) ✓

Store in string . (1-9) X \rightarrow Variable k name int
(single quote) . () ✓ sy starts na ho.

like this

\rightarrow datatype \rightarrow stores
Char $c = 'a'$ \rightarrow as variable
↳ variable Name

is k no 97
hota hai. \leftarrow $'a'$ \Rightarrow 1 Byte memory
so convert c (milti hai.

into binary form $c=97$ Means 8 bits

Name \rightarrow Read Transistors:
 $0 \ 1 \ 1 \ 0 \ 0 \ 0 \ 0 \ 1$
 $2^6 + 2^5 + 2^4 + 2^3 + 2^2 + 2^1 + 2^0$

$$\Rightarrow 97 = 'a'$$

2	1	0	1	0	1	0	1
2	1	0	1	0	1	0	1
2	1	0	1	0	1	0	1
2	1	0	1	0	1	0	1
2	1	0	1	0	1	0	1
2	1	0	1	0	1	0	1
2	1	0	1	0	1	0	1
2	1	0	1	0	1	0	1

\rightarrow Is this allow? $c = 'da'$ X

No, just single char allowed,
not more.

Mon Tue Wed Thu Fri Sat Sun stores 4 bytes.

Date _____

③ float: $1.28, 2.6, 7.023$

Let say: float $f = 1.28;$

1.28

f

↓ (allocate 4 bytes)

1 bit = 8 bytes 1 byte = 8 bits

2 1.28

$4 \text{ bytes} = 4 \times 8 = 32 \text{ bits}$

Binary

Transistor:

f ← $2^7 + 2^6 + 2^5 + 2^4 + 2^3 + 2^2 + 2^1 + 2^0$
 $0 \ 1 \ 0 \ 1 \ 0 \ 1 \ 0 \ 0 \ 1$

(f first jo left mai kota os-sy
 point kerna start karta hai, and jb
 wapis 1.28 mai convert kernav ho tu
 right → left conversion use karta ha
 with 2^0)

→ stores 8 bytes

④ double $d = 4.63$

let say k mere pass 1
 built bua number hai, jo k float
 jo k '4 bytes' mai store nahi hokta
 tum oskay 3 will use double jo
 k 8 bytes lata hai. so, 9 will
 use double instead of k mere float
 user kron.

4.63

$d = 8 \text{ bytes}$

(5) Long → 9 bytes:

1002

b = 8 bytes

(Ab jesa k yahan integers buhat basa numbers hai. So, mai osklye long int use krongi.)

→ 1 byte

(6) Boolean: b = 0, 1

↓ ↓

datatype variable

0

b = 1 byte

b = 0

b = 1

b = true

b = false

→ Allowed.

→ Ab agr mujh haan of mai mai answer kerna hain tu oskly mujh true or false hi use kerna chahye, hum ke fazool mai 1 byte ki memory waste hain. jitni kam sy kam hokhey utani hi hui space. Teni chahy or time bachana chahy.

• Space ↓ • complexity ↓ • time ↓

→ Agr issy hi hui koi kam integer mai yes, or no mai kerwana tu same false. we will use

→ Let say, K agr mely pass negative
 Numbers hain two onko mai
 binary mai kesy convert karongi.

(1)

-2

Binary of '2' = 10

2	2	0
2	1	0 ↑
0	1	

→ 1's complement. 101
 (convert '0' to
 '1' and '1' to '0')

→ 2's complement
 (+1)

+1
 110

$1 \rightarrow -v$
 $0 \rightarrow +v$

(computer
 data lg jyg
 sg
 ve
 hai)

Binary form

of -2 is [110]

→ Not convenient Way.
 Iss above Solution say pehly
 scientists my kaha tha k
 half no.s +ve ko dedo and
 -ve ko.

+ve starts from 0
 -ve starts from 1

ab -4 sy
 sequence khatso,

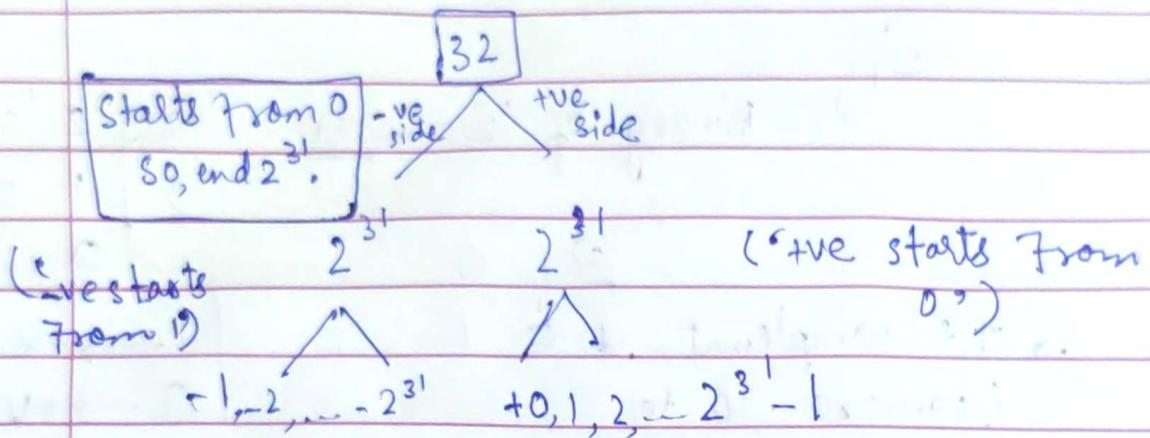
1	0	1	1	0	1	1
1	0	1	1	0	1	1
-	-	-	-	-	-	-
1	0	1	1	0	1	1

1	0	0	-0
0	0	1	-1
0	1	0	-2
0	1	0	-2

= -4

→ So, finally, half +ve, -half negative (-ve).

① int 32 bits



② int 3 bits

