# C in One Shot

## Part – 2

[decision making]

# Control Statements

if ,else ,switch

conditionals o bola hoy eder k

# IF – ELSE

# Ques : Take positive integer input and tell if it is even or odd [2-1]-[2-3]

| Input | Output |
|---|---|
| 5 | Odd |
| 6 | Even |
| 2 | Even |

n%2 → 0

↓

n is divisible by 2

↳ n is even

Any no. which is divisible by 2 is called even

```c
#include <stdio.h>
int main(){
    int n;
    printf("Enter a number : ");
    scanf("%d",&n);
    if(n%2==0){
        printf("Even number");
    }

    return 0;
}
```

Output

Enter a number : 7

[2-1]

# If - Else

$n \rightarrow 6$

```
if (n%2 ==0){
  printf("Even Number");
}
if (n%2 != 0){
  print ("Odd Number");
}
```

[2-2]

**Ques** : Take positive integer input and tell if it is divisible by 5 or not.

[2-4]

**HW** : Any year is input through the keyboard. Write a program to determine whether the year is a leap year or not. (Considering leap year occurs after every 4 years)

Classwork

2000 2004 2008 2012 2016 2020

2022 2026

[2-5]

# Ques : Take integer input and print the absolute value of that integer

Negetive , Positive , Zero

7 → 7

-8 → 8

-450 → 450

[2-6] - [2-7]

```c
#include <stdio.h>
int main(){
    int n;
    printf("Enter a number : ");
    scanf("%d",&n);
    if(n<0){ // if n is negetive
        n = n * (-1);
    }
    printf("The absolute value is  : %d",n);


    return 0;
```

Output

Enter a number : -6

The absolute value is 6

[2-7]


$n = -6 * (-1) = 6$

**Ques** : If cost price and selling price of an item is input through the keyboard, write a program to determine whether the seller has made profit or incurred loss. Also determine how much profit he made or loss he incurred.

[2-8]-[2-11]

```
int cp;
int sp;
scanf()
```

SP > CP (Profit)

CP > SP (loss)

```c
int cp; // dabba
printf("Enter cost price : ");
scanf("%d",&cp);
int sp; // dabba
printf("Enter selling price : ");
scanf("%d",&sp);
if(sp>cp){
    printf("Profit");
}
else{
    printf("Loss");
}
```

10 > 10 ✗

→ CP ≥ SP

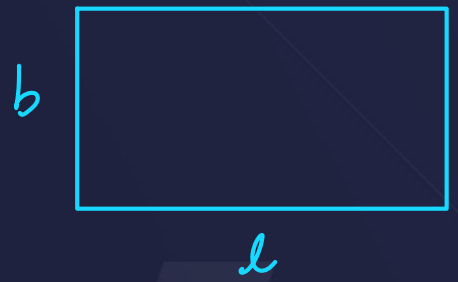

Output

Enter cost price : 10

Enter selling price : 10

**Ques** : Given the length and breadth of a rectangle, write a program to find whether the area of the rectangle is greater than its perimeter.

[2-12]




$A = lb$

$P = 2(l+b)$

# Multiple Conditions Using && and ||

**Ques** : Take positive integer input and tell if it is a three digit number or not.

[2-14]

$n > 99$ and $n < 1000$

```
if (n > 99 && n < 1000)
{
    // code
}
```

H.W.

**~~Ques~~ : Take positive integer input and tell if it is divisible by 5 and 3.**

[2-15]

H.W.

```
if (n % 5 == 0  &&  n % 3 == 0)
{

}
else
{
    Is se divisible
}
```

**Ques** : Take positive integer input and tell if it is divisible by **5 or 3**.

[2-16]

3, 5, 6, 9, 10, 12, 15, 18, 20, 21

'||' operator

**Ques** : Take 3 positive integers input and print the greatest of them. (all 3 are distinct)

[2-18]

a, b, c

```
if (a > b && a > c){ → a is greatest
    printf( )
}
if ( b > a && b > c)    b greatest
```

H.W. Take 4 positive integers input & print the greatest.

[2-19] a, b, c, d

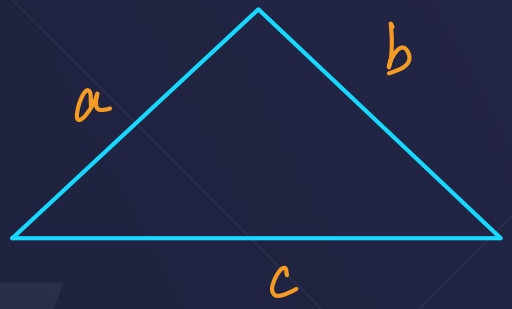
if(a>b && a>c && a> d)

**HW** : If the ages of Ram, Shyam and Ajay are input through the keyboard, write a program to determine the youngest of the three.

just like [2-18] so r korlamna

# Ques : Take 3 numbers input and tell if they can be the sides of a triangle.

[3-20] a, b, c




$a+b > c$

$b+c > a$

$a+c > b$

# Nested If – Else

if else ke andar if

**Ques** : Take positive integer input and tell if it is divisible by 5 or 3 but not divisible by 15.

[2-22]

```
int n;

if (n%5==0 || n%3==0)
```

3, 5, 6, 9, 10, 12, 18, 20, 21, 24, 27, 33

```
// }
if(n%5==0 || n%3==0 && n%15!=0){
    printf("the number is divisible by 5 or 3 but not fifteen");
}
else{
    printf("the number is not matching the required condition");
}
return 0;
```

[2-23]-[2-24]

&& ⟶ ||

n=15

[vvi]

Concept of Heirarchy → BODMAS → B, O, D/M, A/S

n%5==0 || n%3==0 && n%15!=0

[AND & OR]gate logic

n%5==0 → True

n%3==0 → True

n%15!=0 → False

True && False → False

True || False → True

(n%5==0 || n%3==0) && n%15!=0 → True && False → False

**Ques** : Take positive integer input and tell if it is divisible by 5 and 3.

```
if (n%5==0){
    if (n%3==0){

    }

}
```

# Difference b/w '=' and '=='

n = 2; → [assigning] →


n = 7; → [Update]

n == 2; [condition check]

↓

True , False [2-25]-[2-26] test

if (n == 2){ True if (n = 2){

3 3

[ Conditions ]

1) a == b
2) a > b
3) a < b
4) a >= b
5) a <= b

# Ques : Take 3 positive integers input and print the greatest of them.

a, b, c

5 3 1

```
if (a > b){
    if (a > c)
        a is greatest
    else
        c is greatest
}
```

a, b, c

7, 8, 9

```
scanf("%d", &c);
if(a>b){ // b is out of race
    if(a>c)
        printf("%d is greatest",a);
    else // a<c    ->   b < a < c
        printf("%d is greatest",c);
}
else{ // b > a   ->   a ab sabse bada to nahi hai
    if(b>c)
        printf("%d is greatest",b);
    else // c>b   ->    a<b<c
        printf("%d is greatest",c);
}
```

**HW** : If the ages of Ram, Shyam and Ajay are input through the keyboard, write a program to determine the youngest of the three.

[2-31]

Nested Loops se →

# Else If

# sp ,cp

```
if(sp>cp){
    printf("Profit");
}
else if(cp>sp){
    printf("Loss");
}
else{
    printf("No profit, no loss");
}
```

**Ques** : Take input percentage of a student and print the Grade according to marks:

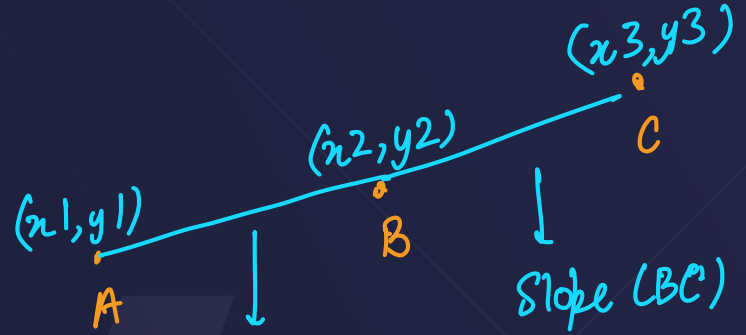
1) 90-100 Excellent
2) 80-90 Very Good
3) 70-80 Good
4) 60-70 Can do better
5) 50-60 Average
6) 40-50 Below Average
7) <40 Fail

```
int n;
if (n > 91 && n < 100)
    printf(Exe.. )
if(n > 81 && n < 91)
```

# Maths

**Ques** : Given three points (x1, y1), (x2, y2) and (x3, y3), write a program to check if all the three points fall on one straight line.

[3-37]




```
double x1, y1, x2, y2, x3, y3;

double m1 = (y2-y1)/(x2-x1);
```

Slope (AB)

$$\frac{y2-y1}{x2-x1} = m1$$

Slope (BC)

$$\frac{y3-y2}{x3-x2} = m2$$

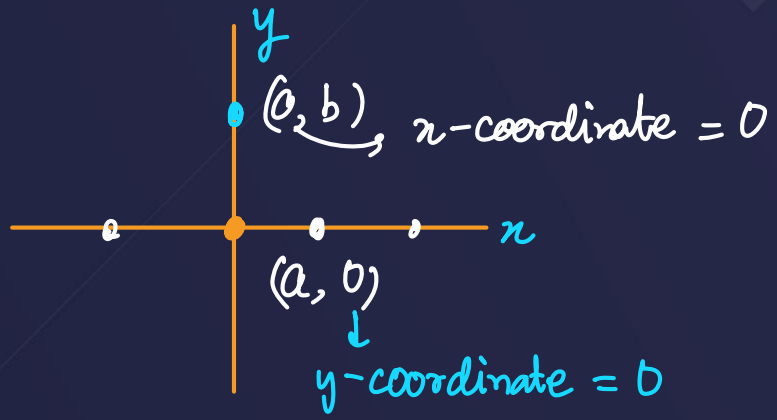
```
if(m1 = m2)
```

**Ques** : Given a point (x, y), write a program to find out if it lies on the x-axis, y-axis or at the origin, viz. (0, 0). [3-38]

```
if ( lies on x-axis ) {


}
else if ( lie on y ) {


}
else {
}
```



[3-39]

Cool Banne

# Ternary Operator

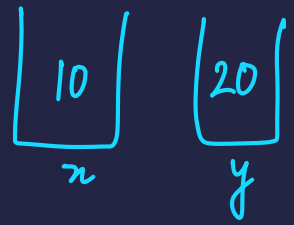
expression 1 ? expression 2 : expression 3

Predict the Output

# MCQ Time !

# Predict the output

```
main( ) {
    int x = 10, y = 20 ;
    if ( x == y ) ;
        printf ( "\n%d %d", x, y ) ;
}
```




independent of the above 'if' statement

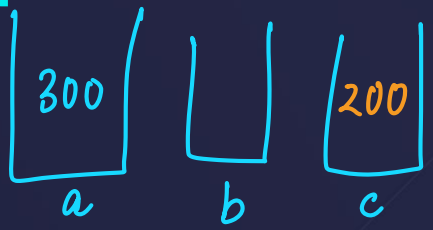
Output

:

: 10 20

# Predict the output

```
main( ) {
    int a = 300, b, c ;
    if ( a >= 400 )
        b = 300 ;
    c = 200 ;
    printf ( "\n%d %d", b, c ) ;
}
```



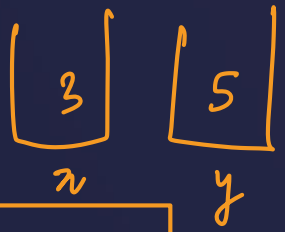

Output

- 
- G 200
  garbage value

uninitialized variable

# Predict the output

```
main( ) {
    int x = 3, y = 5 ;
    if ( x == 3 )
        printf ( "\n%d", x ) ;
    else ;
        printf ( "\n%d", y ) ;
}
```

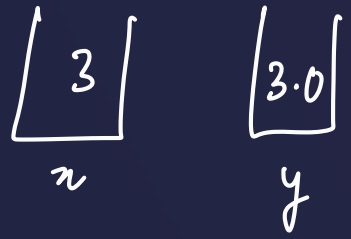



Output

•
• 3
• 5

# Predict the output

```
main( ) {
    int x = 3 ;
     float y = 3.0 ;
     if ( x == y )
          printf ( "\nx and y are equal" ) ;
     else
          printf ( "\nx and y are not equal" ) ;
}
```

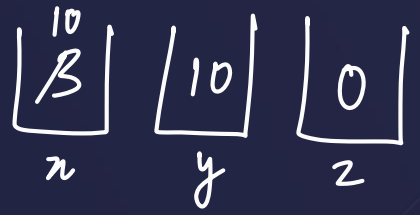



Output

- 
- x and y are equal

# *Predict the output

```
main( ) {
   int x = 3, y, z ;
    y = x = 10 ;
     z = x < 10 ;
     printf ( "\nx = %d y = %d z = %d", x, y, z ) ;
}
```




→ false → 0

Output

- 
- x=10 y=10 z=0

## Boolean :

```
bool x = true  → 1
         false → 0
```

```
int x = 3;
printf("%d", x = 10);
```


```
int x = 3;
print("%d", x == 10);
```

No → false

# HW : Predict the output

```
main( ) {
    int a = 5, b, c ;
    b = a = 15 ;
    c = a < 15 ;
    printf ( "\na = %d b = %d c = %d", a, b, c ) ;
}
```

# Predict the output

```
main( ) {
    int k = 35 ;
    printf ( "\n%d %d %d", k == 35, k = 50, k > 40 ) ;
}
```


true → 1

true → 1

Output

•

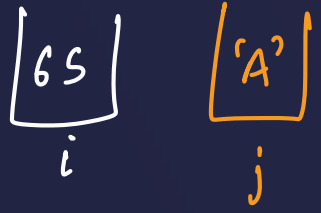
• 1 5 0 1

# HW : Predict the output

```
main( ) {
    int x = 15 ;
    printf ( "\n%d %d %d", x != 15, x = 20, x < 30 ) ;
}
```

# Predict the output

```
main( ) {
    int i = 65 ;
    char j = 'A' ;
    if ( i == j )
        printf ( "C is WOW" ) ;
    else
        printf( "C is a headache" ) ;
}
```




Output

- C is WOW

# HW : Predict the output

```
main( ) {
    int a = 500, b, c ;
    if ( a >= 400 )
        b = 300 ;
        c = 200 ;
        printf ( "\n%d %d", b, c ) ;
}
```

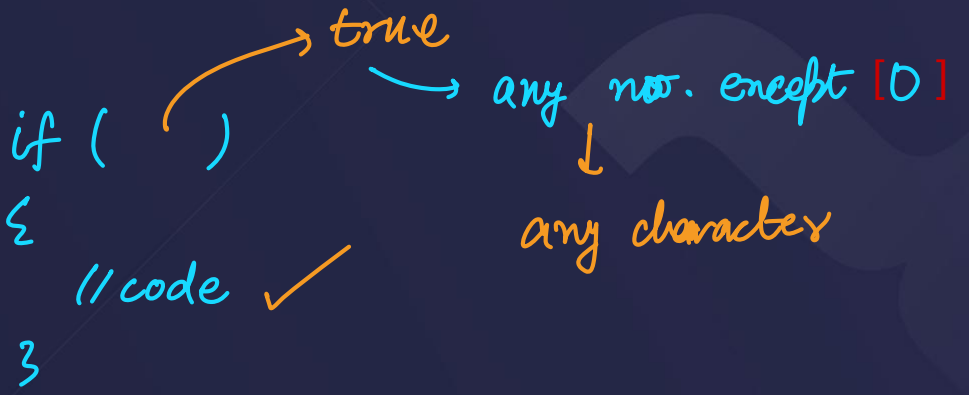
Done

# The Real Thing:

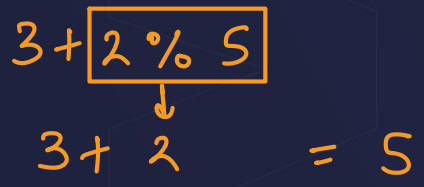
```
if ( condition )
        statement ;

if ( expression )
        statement ;
```

# The Real Thing:




```
if ( 3 + 2 % 5 )
    printf ( "This works" ) ;
if ( a = 10 )
    printf ( "Even this works" ) ;
if ( -5 )
    printf ( "Surprisingly even this works" ) ;
```



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```
if ( condition )
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if ( expression )
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```