Java in One Shot

Part - 2

Control Statements

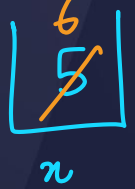
IF – ELSE

Ques : Take positive integer input and tell if it is even or odd

n % 2 == 0 → even

n % 2 ≠ 0 → odd

int x = 5; (assign)



x = 6;

if (5 % 2 == 0) (comparison)

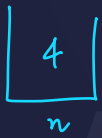
```
if (n != 2){
---
3
```

```java
Scanner sc = new Scanner(System.in);
System.out.println("Enter a number : ");
int n = sc.nextInt();
if(n%2==0){
    System.out.println("The number you entered is even");
}
```

Output

Enter a number : 4

The no. you en. is even



if(n % 2 == 0) // n even hai kya?

true

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

```
int n = sc.nextInt();
if (n % 5 == 0){
   sout ("Yes, it is disible");
}
else {
   sout ("not di    );
}
```

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)

HW & CW

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

'Assignment'

0, 1, 2, 3, 4, -1, -2, -3, -5, -7

|-3| = 3

|5| = 5

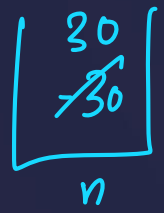
|-7| = 7

negetive no. →

input	output
~~+70~~	~~70~~
-30	30

n = -30

→ n = n*(-1);

→ 

n = (-30)*(-1)

= 30

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.

CP SP ↓ bech

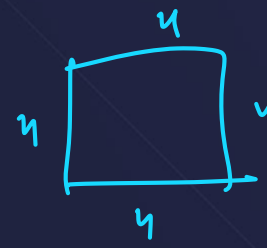
SP - CP = Profit

CP - SP = loss

```
if (SP > CP){
    profit hoga
}
```

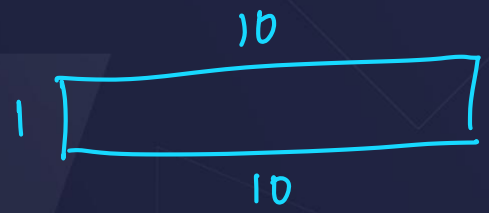
```
if (CP > SP){
    loss hoga
}
```

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.



→ A = 16

P = 16



→ A = 10

P = 2(10+1) = 22

```java
Scanner sc = new Scanner(System.in);
System.out.println("Enter length : ");
int length = sc.nextInt();
System.out.println("Enter breadth : ");
int breadth = sc.nextInt();
int area = length*breadth;
int perimeter = 2 * (length + breadth);
if(area>perimeter){
    System.out.println("Area is greater than perimeter");
}
else{
    System.out.println("Perimeter is greater than area");
}
```

// area = 16

// perimeter = 16

if(perimeter ≥ area)

$l = 4$

$b = 4$

Assignment : Input length, breadth, square or not

l, b

if (l == b) -> yes square

else

Else If

Ques : Take input percentage of
print the Grade according to ma

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

```java
if(n>90){
    System.out.println("Excellent");
}
else if(n>80){
    System.out.println("Very Good");
}
else if(n>70){
    System.out.println("Good");
}
else if(n>60){
    System.out.println("Can do better");
}
else if(n>50){
    System.out.println("Average Marks");
}
else if(n>40){
    System.out.println("Below average");
}
else{
    System.out.println("fail");
}
```

Multiple Conditions Using && and ||

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

999 → Yes

1000 → No

97 → No

7 → No

222 → Yes

$99 < n < 1000$

$n > 99$ and $n < 1000$

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

H.W.

Take integer input & tell if it is a 2 digit number

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

```
int n = sc.nextInt();
if(n%5==0 && n%3==0)
{
    sout(    );
}
```

H·W·

WAP to input a number & tell if it is divisible by 5 but not divisible by 3.

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

```
if(a && b)
```
true true

```
if ( n%5==0  ||  n%3==0)
{
    sout("The no is divisible by 3 or 5");
}
```

&& → logical and

|| → logical or

== → equal

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

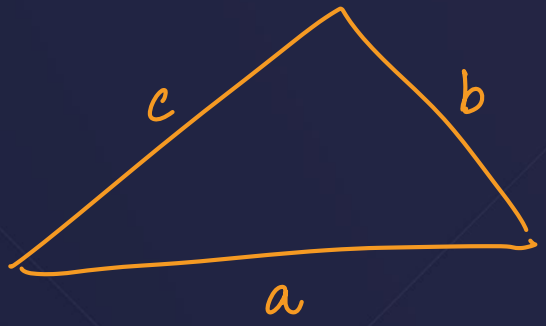
a, b, c

```
if (a > b && a > c){
   Sout (a + " is largest");
}
if (b>a && b>c){
    sout (b + " is largest");
}
if (c>a && c>b){
    sout (c + " is largest");
}
```

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

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

Mathematics :



$a + b > c$

$b + c > a$

$a + c > b$

Nested If – Else

Ques: WAP to find if a number is divisible by both 3 & 5.

M1

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

3
```

M2

```java
int n = sc.nextInt();
if(n%5==0){
    if(n%3==0){
        System.out.println("The number is divisible by 3 and 5 both");
    }
    else{
        System.out.println("Not divisible");
    }
}
else{
    System.out.println("Not divisible");
}
```

n = 12

Not Divisible

n = 30

The no. is di. by 3&5b..

n = 25

Not divisible

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

3, 5, 6, 9, 10, 12, ~~15~~, 18, 20, 21, 24, 25

```
if (n%5==0  || n%3==0){
    if(n%15!=0){
        sout();
    }
}
```

True || False = True

False || True = True

True || False = True

False || False = False

True && False = False

False && True = False

False && False = False

True && True = True

```java
if(n%5==0 || n%3==0 && n%15!=0){
    System.out.println("The number is divisible by 3 or 5 but not fifteen");
}
else{
    System.out.println("Not matching the required condition");
}
```

n = 30 n%5==0 || n%3==0 && n%15!=0

True

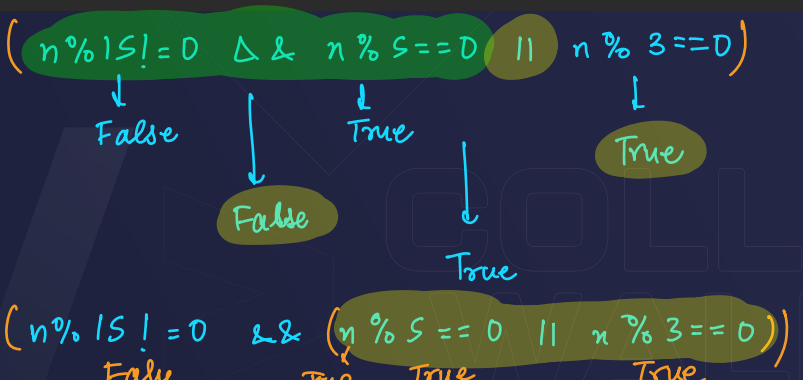
True false false

Hierarchy of operators : BODMAS → B, O, D/M, A/S

&& is higher than ||

```java
if(n%15!=0 && n%5==0 || n%3==0){
    System.out.println("The number is divisible by 3 or 5 but not fifteen");
}
else{
    System.out.println("Not matching the required condition");
}
```

n = 30



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

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

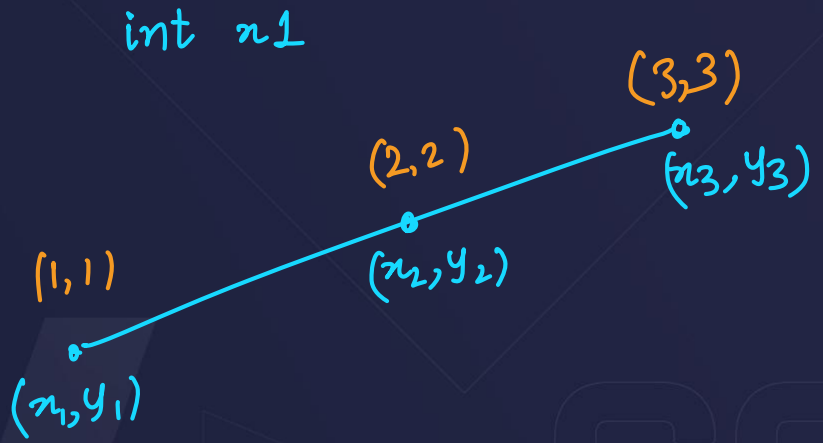
```
a, b, c
if (a>b){
    if (a>c){
        sout (a +" is largest");
    }
    else {
        sout (c +" is largest");
    }
}
else { // a<b
    if (b>c)
        sout (b + " is largest");
    else{
        sout (c +" is largest");
    }
}
```

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

Do it using nested if-else & not (Lec 11)

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.



$$\frac{y2 - y1}{x2 - x1} = \frac{y3 - y2}{x3 - x2}$$

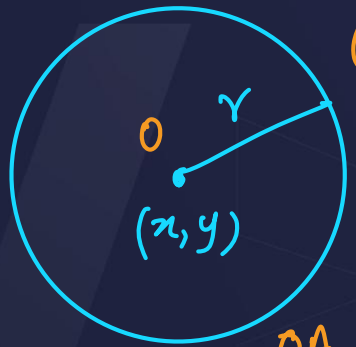
$$\downarrow \quad m1 \qquad \downarrow \quad m2$$

HW → Code

Ques : Given the coordinates (x, y) of a center of a circle and its radius, write a program which will determine whether a point lies inside the circle, on the circle or outside the circle.

int x, int y, int radius

int x1, int y1



A
(x1, y1)

OA = d

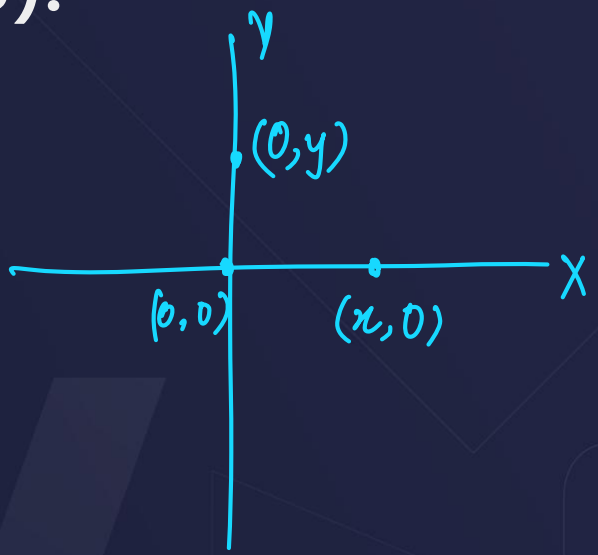
→ Conditions :-

$OA^2 > r^2$	Outside
$OA^2 < r^2$	Inside
$OA^2 = r^2$	On the circle

$$OA = \sqrt{(x - x1)^2 + (y - y_1)^2}$$

HW

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).



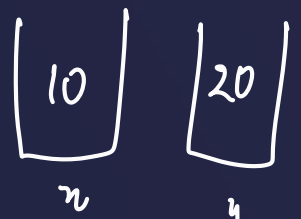

```
if (x==0 && y==0) {
   sout("The point is origin");
}
else if (x==0) {
   sout ("The pt. lies on y-axis");
}
else if (y==0) {
   sout ("The point lies on x-axis");
}
else {
   sout (      );
}
```

Predict the output

MCQ Time !

Predict the output

```
psvm( ) {
    int x = 10, y = 20 ;
    if ( x == y ) ;
        sout(x+" "+y);
}
```



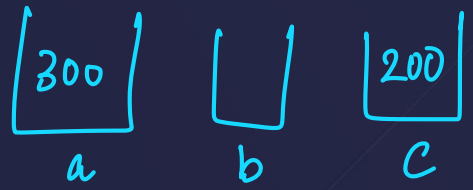
Output

10 20

```
if (x==y)
    sout (    );
```

Predict the output

```
psvm( ) {
    int a = 300, b, c ;
    if ( a >= 400 )
        b = 300 ;
    c = 200 ;
    sout(b+" "+c);
}
```



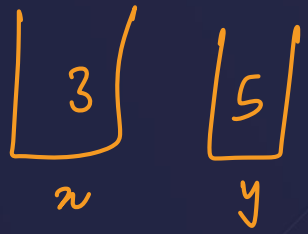
Output

Error

Error : Uninitialized variable

Predict the output

```
psvm( ) {
    int x = 3, y = 5 ;
    if ( x == 3 )
        sout(x);
    else ;
        sout(y);
}
```



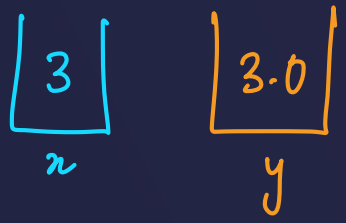
Output

3

5

Predict the output

```
psvm( ) {
    int x = 3 ;
    double y = 3.0 ;
    if ( x == y )
        sout("x and y are equal" );
    else
        sout("x and y are not equal" );
}
```



Output

x and y are equal

int, double → same value

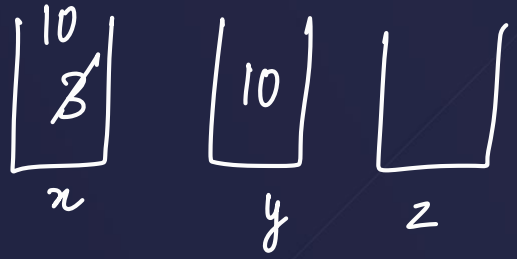
→ considered to be same

*Predict the output

```
psvm( ) {
    int x = 3, y, z ;
    y = x = 10 ;
    z = x < 10 ;
    sout("x = "+x+" y = "+y+" z = "+z);
}
```

false

Error



x = 10

y = 10

z = false

Heirarchy of operators B, O, D/M, A/S

&& → ||

> , <

true 1

false 0

boolean

C/C++ bool

boolean → true

→ false

$x = 9$

$z = x < 10$

integer

false

$z = x < 10$

HW : Predict the output

```
psvm( ) {

    int a = 5, b, c;
     boolean c ;
    b = a = 15;

    c = a < 15 ;

    sout("a = "+a+" b = "+b+" c = "+c);

}
```

Predict the output

```
psvm( ) {
    int k = 35 ;
    sout(k==35);
    sout(k=50);
    sout(k>40);
}
```

Output

True

50

True

Sout (x > 10) → True, False

sout (x == 10)

x < 10

(x > 10)

HW : Predict the output

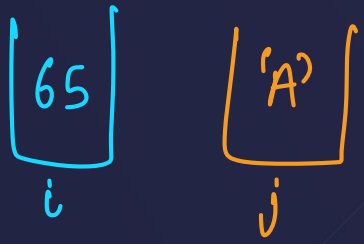
```
psvm( ) {
    int x = 15 ;
    sout(x!=15);
    sout(x=20);
    sout(x<30);
}
```

Predict the output

ASCII values

A → 65 a = 97

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



Output

C is WOW

In Java, char, int Boolean, int