

Lecture1

Sunday, 29 December 2019 1:23 PM

Syso → System.out.println();

```
public class HW {
    psvm(String[] args) {
```

```
        {
            System.out.print("Hello World");
            {
                System.out.print(" ");
                System.out.print("\n");
            }
            System.out.print("Hello World");
        }
    }
    {
        System.out.print("HW");
        System.out.print("\n");
    }
}
```

Console

HW HW HW

→ Hello

3 → Hello World — Hello World

① * System.out.print("HW")
② — .println("HW").

① HelloWorld
② HelloWorld

Syso("Hello World-");

```
Syso("Hello\n");
Syso("World");
```

} Hello
World.

Same [Syso("Hello\n");
System.out.println("Hello");

```
public class si {
    psvm(String[] args) {
```

→ int p = 1000;
int r = 10;
int t = 1;
← int si;

1000	10	1	100	
------	----	---	-----	--

p r t si
#eff #eff #eff #eff

si = (p * r * t) / 100; // (1000 * 10 * 1) / 100

```

    Syso(si);
    Syso("the si is " + si);
    }
}

```

Concatination.

100.
the si is 100

("the si is 100");

Syso("the " + si + "si is");

the 100 si is

"the 100 si is"

largest of 3 numbers;

```

class largest of 3 numbers {
    psum(String[] args) {

```

100	200	100	
a	b	c	

① → 100 20 100

② → 10 5 5 A

③ → 5 10 5

④ → 5 5 100

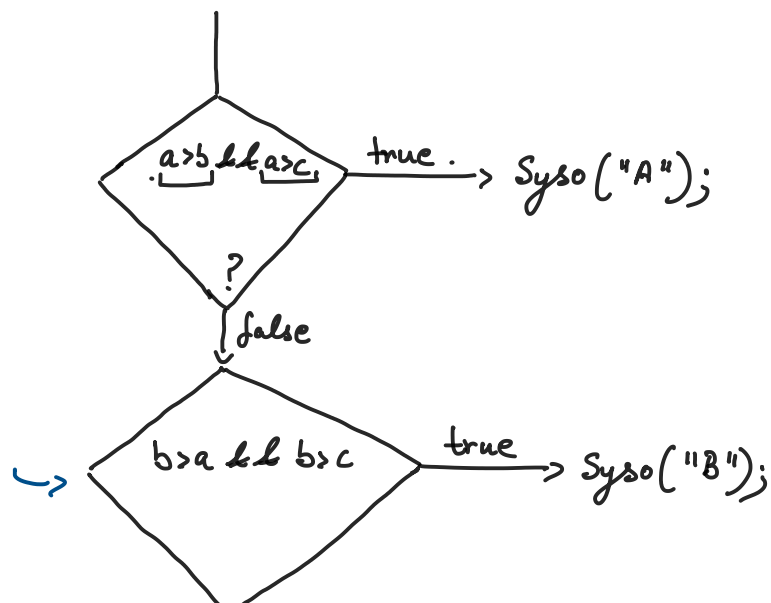
```

    int a=100;
    int b=200;
    int c=100;
    if (a > b && a > c) {
        Syso("A is largest");
    } else {
        if (b > a && b > c) {
            Syso("B");
        } else {
            Syso("C");
        }
    }
}

```

10 > 20 = false.

b > a && b > c



↓ false
Syso('C');

Marks ≥ 80 & Marks $< 90 \rightarrow A$ int marks = 70.5; \Rightarrow 70
 ≥ 70 & $< 80 \rightarrow B$ (85)
 ≥ 60 & $< 70 \rightarrow C$ (71).

① if () {
 }
 if () {
 }
 if () {
 }
 }

② if (marks ≥ 80 & marks < 90) {
 ✓ Syso("A");
 } else if (marks ≥ 70 & marks < 80) {
 Syso("B"); ✓
 } else if (marks ≥ 60 & marks < 70) {
 \Rightarrow Syso("C");
 } else {
 Syso("fail");
 }

≡

Syso("1");
 Syso("2");
 — ("3");
 — ("4");
 — ("5");
 !
 — ("100");

int i;
 for (i = 1; i \leq 5; i++) {
 ③ Syso(i);
 }
 ≡ Syso(i); 116.

loops
 Repetitive work

- ① for
- ② while
- ③ do while.

6	
---	--

i

i \leq 100.

1. — 0 1 2 3 4
 2. ←
 3. } till Condition true.
 4. }

1
 2
 3
 4
 5

$i = i + 1;$
 $i = 1 + 1;$
 $2 \leq 100 \checkmark$
 $3 \leq 5;$
 $4 \leq 5$
 $5 \leq 5$
 $6 \leq 5 \}$ false.

int i=1;
 while (i<=5) {
 syso(i);
 i++; // loop terminating Condition!
 }
 => 3

$1 \leq 5 \Rightarrow 2$
 $2 \leq 5 \Rightarrow 3$
 $3 \leq 5 \Rightarrow 4$
 $4 \leq 5 \Rightarrow 5$
 $5 \leq 5 \Rightarrow 6$
 $6 \leq 5 \Rightarrow \text{false.}$

$\Rightarrow 1 \leq 5 \Rightarrow 1$
 $1 \leq 5 \Rightarrow 1$
 1
 :
 1
 !
 .

int i=10;
 do {
 syso(i); // 10
 i++; // 11
 } while (i<=5);
 (1<=5) false

Diff b/w while & do while?

Sum of first N natural Numbers:-

N=5, sum=0;

for (int i=1; i<=N; i++) {
 sum = sum + i;
 }

5	15	6	
N	sum	i	

$1 \leq 5$

$0 + 1 = 1$

$1 + 2 = 3$

↳ Syso(Sum);

$(6 \leq 5) \Rightarrow \text{false}$

$\underline{1} + \underline{2} + \underline{3} + \underline{4} + 5 = 15$
 Sum = 0 + 1 = 1
 = 1 + 2 = 3
 = 3 + 3 = 6
 = 6 + 4 = 10
 = 10 + 5 = 15

Sum = 0; N = 5
 int i = 1;
 while(i <= N) {
 Sum = Sum + i;
 i++;
 }

3
 Syso(Sum);
 var Sum = 0, var N = 5;
 for(var i = 1; i <= N; i++) {
 Sum = Sum + i;
 }

i = 1, N = 5
 while i <= N:
 print(i)
 i = i + 1

3

print(Sum)

Console.log(Sum);

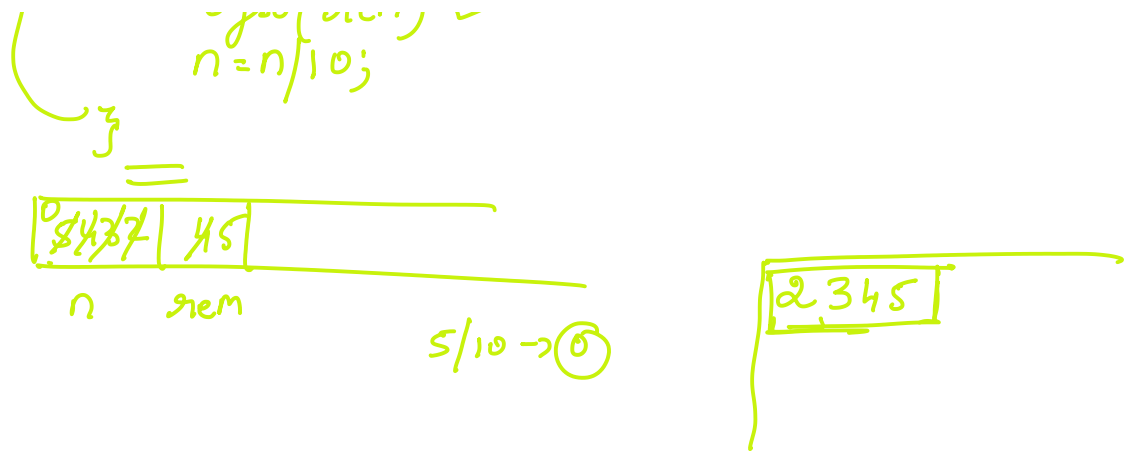
① Print reverse.

5432 \Rightarrow 2345

$\rightarrow 5432 \overset{①}{\%} 10 \Rightarrow 2 \rightarrow \text{print} \overset{②}{\downarrow}$
 $\hookrightarrow 5432 / 10 \Rightarrow 543 \overset{①}{\%} 10 \Rightarrow 3 \rightarrow \text{print} \overset{②}{\downarrow}$
 $\hookrightarrow 543 / 10 \Rightarrow 54 \overset{①}{\%} 10 \Rightarrow 4 \rightarrow \text{print} \overset{②}{\downarrow}$
 $\hookrightarrow 54 / 10 \Rightarrow 5 \overset{①}{\%} 10 \Rightarrow 5 \rightarrow \text{print} \overset{②}{\downarrow}$
 $\hookrightarrow 5 / 10 \Rightarrow 0 \rightarrow \text{print} \overset{②}{\downarrow}$
 2345

while(n != 0) {
 int rem = n % 10;
 Syso(rem);
 n = n / 10;
 }

5432
 // 2



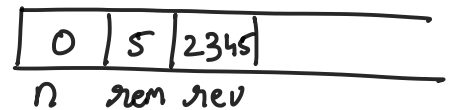
$5432 \leftrightarrow rev \Rightarrow 2345$
 $\hookrightarrow print$

$0 \times 10 + 2$
 $\hookrightarrow 2$
 $\hookrightarrow 2 \times 10 + 3 = 23$
 $\hookrightarrow 23 \times 10 + 4 = 234$
 $\hookrightarrow 234 \times 10 + 5$
 $\hookrightarrow 2345$

```

rev = 0; n = 5432;
while (n != 0) {
    int rem = n % 10;
    rev = rev * 10 + rem;
    n = n / 10;
}

```



$2 \times 10 + 3 = 23$
 $23 \times 10 + 4 = 234$
 $234 \times 10 + 5 = 2345$

$\}$
 $syso(rev);$
 $5/10 = 0$

① check whether a number is prime or not?

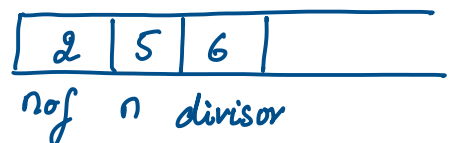
① Count number of factors:-

```

int n = 5;
int nof = 0;
int divisor = 1;

```

$6 \leq 5$
 $8 \leq 5$
 $while (divisor \leq n) \{$



$5 \% i == 0$

```

if (n % divisor == 0) {
    nof++;
}

```

$5 \% 2 == 0$
 $5 \% 3 == 0$
 $5 \% 4 == 0$
 $5 \% 5 == 0$

\Rightarrow divisor++; ✓

```

if (nof == 2) {
    Syso("Prime");
} else {
    Syso("Not Prime");
}

```

② \Rightarrow

```

int divisor = 2;
int n = 7;
while (divisor < n) {

```

8
 $2 \text{ to } 7$
 7 6
 $2-5$

```

    if (n % divisor == 0) {
        Syso("Not Prime"); ✓
        return; > terminate my program;
    }

```

$7 \% 2 == 0$.

$\hookrightarrow 7 \% 3 == 0$

$7 \% 4 == 0$

$7 \% 5 == 0$

$7 \% 6 == 0$

\Rightarrow divisor++; // 4, 5, 6, 7

}

\Rightarrow Syso("Prime");

NotPrime ✓

① Nth Fibonacci.

terms \rightarrow	0	1	2	3	4	5	6	7	8	9	10
Seq \rightarrow	0	1	1	2	3	5	8	13	21	34	55

5 \rightarrow ⑤

3 \rightarrow ②

7 \rightarrow ⑬

Seq \rightarrow	0	1	1	2	3	5	8
term \rightarrow	0	1	2	3	4	5	6

\leftarrow dn
 \leftarrow next
 \leftarrow dn

```

Counter = 1;   n = 5;
✓ f n = 0;      b <= 5
                a <= 5
                1 <= 5
                1 <= 5
                2 <= 5
while (Counter <= n) {
    int next = f n + s n;
    f n = s n;
    s n = next;
    Counter++;
}

Syso(f n); =>

```

Counter = ~~1~~ ~~2~~ ~~3~~ ~~4~~ ~~5~~ 6
 $0 + 1 = 1$
 $1 + 1 = 2$
 $1 + 2 = 3$
 $2 + 3 = 5$
 $3 + 5 = 8$
0th

$n = 0$
 Counter = 1
 $(1 <= 0)$