Core Java Handwritten Notes

Part - 2

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Looping Statements

Looping statements are generally used to repeat a specific task

* looping statements are generally used to traverse the data as well
* The different looping statements are as follows
  1) for loop
  2) While loop
  3) do While loop
  4) nested for loop

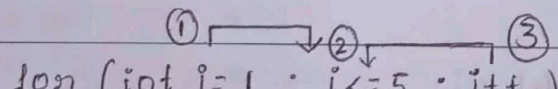
(1) for loop

for loop is a looping statement is used to repeat a task for the specified number of times

* We use for loop When we know the logical start and the logical end

Syntax: for (initialisation; condition; updation)
{
// Set of instructions to be repeated;
}

Ex: print Hello world 5 times




```
for (int i=1 ; i<=5 ; i++)
{
    System.out.println("Hello world");
}
```

Tracing:

i	i<=5	O/P
1	1<=5 → T	Hw
2	2<=5 → T	Hw
3	3<=5 → T	Hw
4	4<=5 → T	Hw
5	5<=5 → T	Hw
6	6<=5 → F	

EX 6

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```
Class ForloopDemo
{
public static void main (String[] args)
 {
  for (int i=1; i<=5 ; i++)
  {
  System.out.pln( int i=1 ; i<=5 ;; i++ )
  {
   S.O.pln (" Hello world");
  }

  for (int i=1 ; i<=5 ; i++)
  {
  S.O.p ( "i:" +i);
  }
```



```
for (int z=156 ; z<=160 ; z++) //(int z=156 ; z<161 ; z++)
  {
 S.O.p ("z");
  }
  S.Op (" --- ");

for (int even=2 ; even<=10 ; even=even+2)
 {
System.out.println (even);
 }
System.out.println (" - - ");
```

O/P

2
4
6
8
10

```
for (int z=156; z<161 ; z++) // for (int z = 156 ; z<=160 ; z++)
 {
  S.O.p (z)
 }
 S.Op (" - - - ")
```

O/P

156
157
158
159

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```
for (int i=1 ; i<=9; i+=2)
{
s.o.p (i);
}
s.o.p (" --- ");
for (int z=3 ; z<=15 ; z=z+3);
{
s.o.p (z);
}
}
```

O/P

1
3
5
7
9

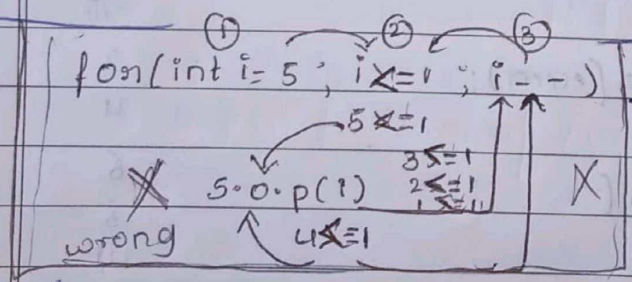
3
6
9
12
15

Q) Write a program to print numbers from 1 to 10 in reverse order

→

```
class Reversecorder
{
public static void main (String[] args)
{
for (int i=10 ; i>=1 ; i--)
{
System.out.println(i);
}
}
```


5 > 4 > 3 > 2 > 1



→ Ex for infinite loop & NO O/P

Infinite loop

```
for (int i=5 ; i>=0 ; ; i++)
{
s.o.p(i);
}
```

NO O/P

```
for (int i=5 ; i<=1 ; i--)
{
s.o.p(i);
}
```

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Ex) Class ForLoopDemo

```
{
public static void main(String[] args)
{
for(int i=1; i<=10; i++)
  {
  if(i%2==0)
  {
  system.out.println(i);   // 2==0
  }
}
  s.o.p("-----");
```



```
for(int i=1; i<=10; i++)
  {
  if(i%2==1)
    {
  system.out.println(i);
  }
}
  for(int i=1; i<=30; i++)
  {
  if(i%3==0) // if(i%5==0) multiples of 5
  {
  system.out.println(i);
  }
}
}
}
```

O/P - 1
3
5
7
9

O/P : 3
6
9
12
15
18
21
24
30

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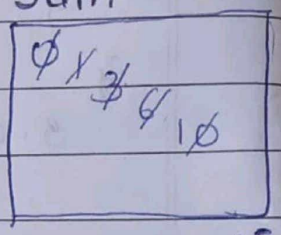
Q) print the sum of 'n' natural numbers.

→
```
class NaturalNumbers
{
  psvm (String[] args)
  {
    int sum=0;
    for(int n=5;
    for (int i=1 ; i<=n ; i++)
    {
      sum = sum + i ;
    }
    s.o.p(sum)
  }
}
```

n=5

1+2+3+4+5

Sum



Q) Write a program to find the sum of even numbers from 1 to 10

→
```
class EvenNum
{
  psvm (String[] args)
  {
  for ( int i= 1 ; i<=10 ; i+2)
  {
      result = result + 1 ;
  }
  s.o.pln ("sum of Even nums :" + result);
  }
}
}
```

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While loop

* While loop is a looping statement which is used to execute a set of instructions until the condition is false.
* In other words while loop keeps on executing if the condition is true & stops when condition is false.

Syntax:-

```
While (condition)
{
    Implementation
    - - - -
}
```

Ex)

```
int i=1;
while(i<=5)
{
System.out.println(i);
  i++;
}
```

1<=5
2<=5
3<=5
4<=5
5<=5
6<=5 - false

O/P

1
2
3
4
5
6

Ex)

```
int n=5
While(n>=1)
{
S.O.pln(n);
  n--;
}
```

5>=1
4>=1
3>=1
2>=1
1>=1
0>=1 - F

O/P

5
4
3
2

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do-While loop

* do While loop is a looping statement similar to While loop i.e it keeps on executing until the condition is false

X The difference between While and do While is

→ While checks the condition & then executes set of instructions

→ DoWhile loop executes set of instructions & then checks the condition.

Syntax:
```
do
{
   -- task
}
While (condition);
```


Ex)
```
int i=1;
do
{
  S.O.P(i);
   i++;
}
While(i<=5)
```
O/P
1
2
3
4
5

Ex)
```
int x=5;
do
{
  S.O.Pln(x);
   x--;
}
While(x>=1);
```
O/P
5
4
3
2
1

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Difference between While & do while loop

While loop	do w
* While loop checks the condition first and then executes set of instructions	* do while loop executes set of instructions first and then checks the condition
* If the condition is false While loop doesnot execute even once	* If the condition is false do while loop executes atleast once,

* Ex: int i=10
while(i<=5)
{ s.o.p(i)
}
o/p
no o/p
	Ex):- int n=10;
	do
	{
	s.o.p(n)
	}
	while(n<=5);
	o/p
	10

Nested for loop

* Nested for loop is a combination of 1 for loop within another for loop.

Note: For 1 outer value, all the values of inner for loop gets executed.

Ex:

```
for(int i=1 ; i<=3 ; i++)
{
    s.o.p("Hi");
    for(j=5 ; j<=6 ; j++)
    {
        s.o.p(j+" "+j);
    }
    s.o.p("bye");
}
```

o/p :- Hi 25 36
15 26 bye
16 bye
bye Hi
Hi 35

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```
class nestedforloopdemo
{
public static void main (String[] args)
{

for (i=1 ; i<=2; i++)
 {
System.out.println ("outer for loop start");

      for (j=1 ; j<=2 ; j++)
       {
          System.out.println ("inside inner for loop
                i : " +i+ " j : " +j);
       }

    System.out.println ("outer for loop end");
   }
 }
}
```


output :- Javac nestedforloopdemo.java

Java nestedforloop

outer for loop start

inside inner for loop i:1 j:1

inside inner for loop i:1 j:2

Outer for loop end

outer for loop start

inside inner for loop i:2 j:1

inside. inner for loop i:2 j:2

outer for loop End

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Q) Write a java program to print even numbers from 1 to 10 in reverse order using for loop, while loop, dowhile loop

10
8

for loop

```
for(i=10, i>=10 ; i-=2)
{
    s.o.p(i)
}
```

10
8

while

```
int n=10;
while(n>=2)
{
    s.o.p(n);
    n-=2
}
```

do while

```
int n=10;
do
{
    s.o.p(n);
    n-=2;
}
while(n>=2);
```