**Iteration Statements**

These statements are used to perform a set of instructions repeatedly until the condition

is fulfilled. Iteration statements are also called looping statements.

There are 3 looping statements.

1. For loop
2. While loop
3. Do-while loop

**For loop**

**Syntax**

for( initialization; test expression; increment/decrement expression)

{

 statements;

}

First the control variable is initialized. Then the test expression is evaluated. If this condition is satisfied , statements written in the body of the loop are executed. Then the increment/decrement expression will be executed. After every increment/decrement operation, test condition is checked. If the condition is not satisfied ,control goes to the state

This is an entry controlled loop.

**Ex. write a program to print the school name 5 times in non GUI screen.**

for(int i=1; i<=5;i++)

 System.out.println(“OOHS”);

**Output**

OOHS

OOHS

OOHS

OOHS

OOHS

**While loop**

In while loop, initialization is done before the loop. Then the test condition is checked. If the condition is satisfied the body of the loop is executed. The loop iterates till the test expression evaluates to true. When the expression becomes false, the program control passes to the statement following the loop.

The while loop is an entry-controlled loop. It means that the loop condition is tested before executing the loop body.

**Syntax**

while(test expression)

{

 loop body

}

**Ex. write a program to print the school name 5 times in non GUI screen.**

int i=1;

while (i<=5)

 {

 System.out.println(“oohs”);

 i++;

 }

**Do-while loop**

In the do while loop, the test occurs at the end of the loop. This ensures that the do while loop executes the statements included in the loop body at least once. After the first execution of the statement, it evaluates the test expression. If the expression evaluates to true, then it executes the statements of the loop body again. It will go on executing the statements as long as the condition is true. Once the condition becomes false, the loop will terminate.

This is an exit controlled loop because the test condition is checked after the execution of the body of the loop.

**Syntax**

do

{

 loop body

}while (test expression);

**Ex. write a program to print the school name 5 times in non GUI screen.**

int i=1;

do

 {

 System.out.println(“oohs”);

 i++;

 }while(i<=5);

**Comparison between for , while and do-while loop**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **For loop** | **While loop** | **Do-while loop** |
| 1 | Entry controlled loop | Entry controlled loop | Exit controlled loop |
| 2 | Body of the loop is not executed if the condition is false | Body of the loop is not executed if the condition is false | Body of the loop is executed at least once even if the condition is false. |

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Using for loop** | **Using while loop** | **Using do-while loop** |
| 1 | **Write a program to print the natural numbers till 10 in non GUI screen.** |
|  | for(int i=1; i<=10;i++)  jTextfield1.setText (jTextfield1.getText() +” “ +i); | For(int i=1; i<=10;i++) jTextfield1.setText (jTextfield1.getText()+ “ “ +i); | For(int i=1; i<=10;i++) jTextfield1.setText (jTextfield1.getText()+” “ +i); |
| 2 | **Write a program to print the even numbers till 20 in non GUI screen.** |
|  | int i;for( i=2; i<=20;**i=i+2**) System.out.println(i);  | int i=2;while(i<=20){ System.out.println(i); i=i+2;} | int i=2;do{ System.out.println(i); i=i+2;} while(i<=20); |
| 3 | **Write a program to print the odd numbers till 20 in non GUI screen.** |
|  | int i;for(int i=1; i<=20;**i=i+2**) System.out.println(i); | int i=1;while(i<=20){ System.out.println(i); i=i+2;} | int i=1;do{ System.out.println(i); i=i+2;} while(i<=20); |
| 4 | **Write a program to print the even numbers between 30 and 40 in non GUI screen.** |
|  | int i;for( i=30; i<=40;**i=i+2**) System.out.println(i); | int i=30;while(i<=40){ System.out.println(i); i=i+2;} | int i=30;do{ System.out.println(i); i=i+2;} while(i<=40); |

1. **Convert the following code using do-while and while.**

int z;

for( int y=4;y<=10;y+=2)

 {

 if (y==6)

 z=y+2;

 else

 z=y+3;

 System.out.println(z);

 }

|  |  |
| --- | --- |
| **Using do-while** | **Using while** |
| int z, y=4;do{ if (y==6) z=y+2; else z=y+3; System.out.println(z); y+=2;}while (y<=10);  | int z, y=4;while (y<=10){ if (y==6) z=y+2; else z=y+3; System.out.println(z); y+=2;}  |

1. **Convert the following code using for loop and do-while loop**.

int z=10;

while(z<60)

{

 System.out.println(z);

 z=z+10;

}

|  |  |
| --- | --- |
| **Using for loop** | **Using do- while** |
| int z;for(z=10;z<60;z=z+10) System.out.println(z); | int z=10;do{ System.out.println(z); z=z+10;} while(z<60); |

1. **Find the output**

int x,y, z;

for(x= 1; x<=5;x+=2)

{

 y=x+3;

 z =y\*2;

 System.out.print (z + “ “);

}

System.out.println(i);

**Output**

**8 12 16**

**7**

1. **Find the output**

int p;

for(int b=10;i>5;i--)

{

 if(b%2==0)

 p=b\*3;

 else

 p= b\*5;

 System.out.println(p);

}

**Output**

30

45

24

35

18

1. **Find the output**

int x=8;

do

{

 y=x/2;

System.out.println(x + “ “ +y);

x=x+2;

 }while(x<=12);

**Output**

8 4

10 5

12 6

1. **Howmany times the loop will be executed?**

i=0;

do

{

//Statements

}while (i> 20);

**Ans: once**

**7) How many times, the following loop gets executed?**

i=0;

while (i> 20)

{

//Statements

 }

**Ans: zero number of times**

8) What will be the content of jTextField1 after executing the following code:

int Num = 6;

Num = Num + 1;

if ( Num > 5)

jTextField1.setText(Integer.toString(Num));

else

jTextField1.setText(Integer.toString(Num+5));

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