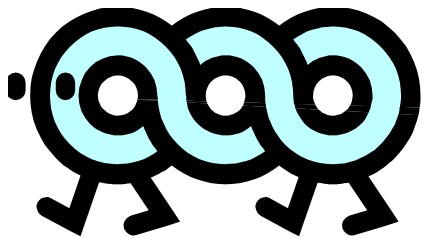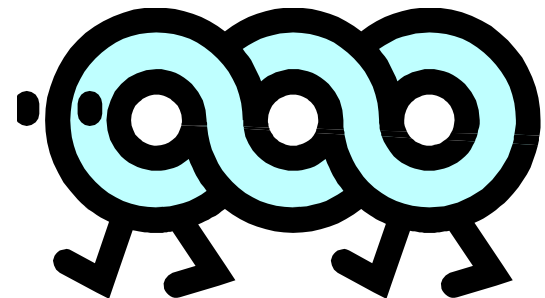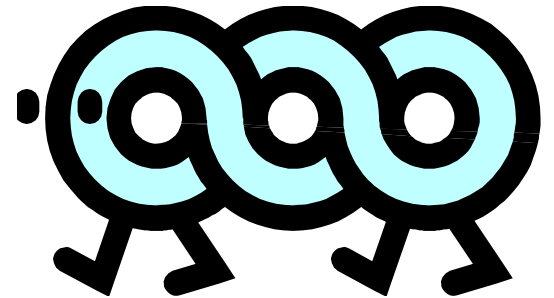# while and do while loops

The while loop

While Loop Definition

A while loop is a block of code associated with a condition. As long as the condition is true, the loop will continue to run the block of code.

the while loop

```
while(  boolean condition placed here  )
{
    do something 1;
    do something 2;
}
```

while loop

```
int run = 0;              //0 – start

while(run<5)              //1 - stop
{
  run = run + 1;          //2 - increment
  out.println(run);       //3 - code
}
```

OUTPUT
1
2
3
4
5

while loop

```
int run = 7;              //0 - start
while(run<10)             //1 - stop
{
  out.println(run);       //2- code
  run++;                  //3 - increment
}
```

What is the final value of run?

OUTPUT
7
8
9

Open
whileone.java

while loop 2

```
int run=25;
while(run>=10)
{
  out.println(run);
  out.println("loop");
  run=run-5;
}
```

OUTPUT
```
25
loop
20
loop
15
loop
10
loop
```

while loop 3

```
int run=10;
while(run<=25)
{
    out.println(run);
    out.println("loop");
    run=run+5;
}
```

What is the final value of run?

OUTPUT
10
loop
15
loop
20
loop
25
loop

tracing a while loop

```
int total=0,x=1;
while(x<6)
{
   total=total+x;
   x++;
}
out.println(total);
```

TRACE

x	total	output
	0	
1	1	
2	3	
3	6	
4	10	
5	15	
6		15

Open whiletwo.java

Open whilethree.java

Dissecting

Dissecting
Numbers

Accessing Digits

```
int num = 9154;
out.println( num % 10 );
out.println( num / 10 );
num /= 10;
out.println( num % 10 );
out.println( num / 10 );
```

OUTPUT
4
915
5
91

Accessing Digits

How would you take apart the number   9154   digit by digit?

You would need a loop.

Accessing Digits

```
int number = 9154;
while( number > 0 )
{
  out.println( number % 10 );
  number = number / 10;
}
```

Open
accessingdigits.java

Summing Digits

set total to 0

while num is greater than 0
  add right most digit to total
  remove right most digit

print out the total

Open summingdigits.java

Complete the code

Open averagingdigits.java
Complete the code

Common Common Errors

common errors

```
int run=0;
while(run<5)
{
   out.println(run);
   < blank 1 >
}
```
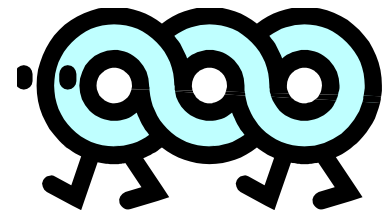
Start work on the labs
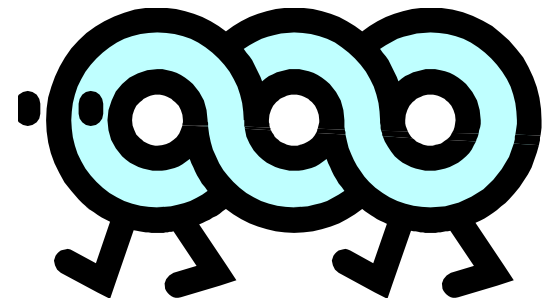
The do-while loop

Do While Loop Definition

A do while loop is a group of statements that will run once before checking the loop condition. If the condition is true, the loop will run again. This run and check process will continue until the condition evaluates false.

the do while loop

```
do{
  do something 1;
  do something 2;
}while(  boolean condition placed here  );
```

do while loop

```
int run=0;              //0 - start
do
{
    run = run + 1;      //1 - increment
    out.println(run);   //2 - code
} while(run<4);         //3 - stop
```

OUTPUT
1
2
3
4

do while loop

```
int run=0;              //0 - start
do
{
    run++;              //1 - increment
    out.println(run);   //2 - code
} while(run<4);         //3 - stop
```

OUTPUT
1
2
3
4

do while loop

```
int run= 4;              //0 - start
do
{
    out.println(run);    //1 - code
    run--;               //2 – decrement
} while(run>0);          //3 - stop
```

OUTPUT
4
3
2
1

Open
dowhileone.java

do while loop 2

```
int run=25;
do{
   out.println(run);
   out.println("loop");
   run=run-5;
} while(run>=10);
```

What is the final value of run?

OUTPUT
25
loop
20
loop
15
loop
10
loop

do while loop 3

```
int run=10;
do{
    out.println(run);
    out.println("loop");
    run=run+5;
} while(run<=25);
```

What is the final value of run?

OUTPUT
10
loop
15
loop
20
loop
25
loop

Open dowhiletwo.java

Open dowhilethree.java

common errors

```
int run=0;
do{
    out.println(run);
    < blank 1 >
} while(run<5)
```

Continue work on the labs