

# Repetition

Mangat

# Repetition in Java

- ▶ You can make parts of your code, or the entire program, repeat over and over.
- ▶ Code can be repeated a fixed amount of time or until a certain condition is met
- ▶ In java we can use a **while statement**, **do-while statement**, or **for statement** to create looping structures

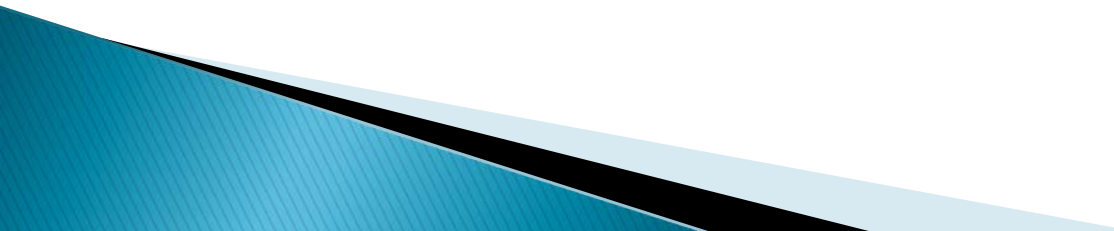
# Example: while

```
import java.util.Random;           //importing a class to generate random numbers
import static java.lang.System.out;

class SimpleDiceGame {
    public static void main(String args[]) {
        Random myRandom = new Random(); //create a random number generator
        int die1 = 0;
        int points = 0;

        while (die1 != 1) {
            die1 = myRandom.nextInt(6) + 1; //create a random number and assign it to die1
            System.out.println(die1);
            points = points + 1;
        }

        System.out.println("Game Over. Your score is ");
        System.out.println(points);
    }
}
```



# While statements

```
while (die1 != 1) {  
    die1 = myRandom.nextInt(6) + 1;  
    System.out.println(die1);  
    points = points + 1;  
}
```

- ▶ The code above shows a while block. The code will run as long as die1 is not equal to 1
- ▶ This means that the red code will run over and over until the program eventually breaks out
- ▶ If the program never breaks out of the loop you could have an error with your **exit condition**. This result is called an **infinite loop**.

# While Examples

Note: not = !, remember all conditions must give Boolean result

*while (x == 1)*

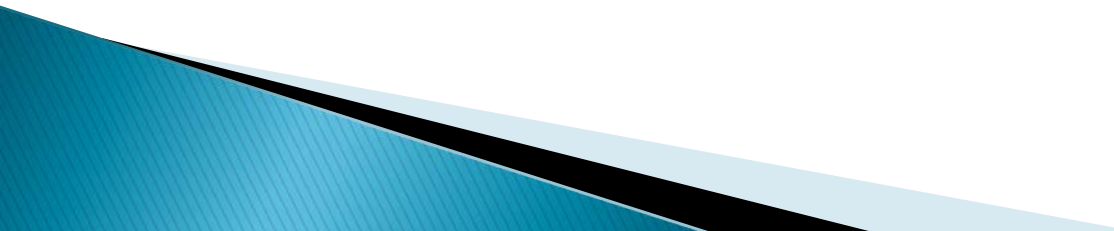
*while (y != 1)*

*while (1 == 1)*

*while (true)*

*while (!userInput.equals("quit"))*

# Do-while statement

- ▶ Very similar to while in structure
  - ▶ The difference is the order at which the condition is checked
  - ▶ A do-while will test the condition at the end of each loop
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# Do-while statements

```
do {  
    System.out.println ("Hello!");  
    age++;  
    age = age + 1  
} while (age < 10);
```

- ▶ The loop will run through one **iteration** and at that point check to see if it should do another

# Exercise

- ▶ Modify your mark program to allow the program to calculate the averages of multiple students
  - ▶ The program should ask the user if they would like to calculate another average and then either loop or quit
  - ▶ Think carefully about the type of loop to use before you begin coding
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