PSLG Session 6

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DLSH QR Code

ICTLC Online QR Code:

The agenda

- Methods
- Classes and Objects

Methods

What is a method?

- Small collection of operations that do something specific.
- To make code more readable and understandable.
- Breaks code down.
- Two types : Procedure and functional.
    - Procedure : No return type, usually has void in header.
        - public static void name(params){Code}
    - Functional : Has a return type.
        - public static int name(params){Code}

Example of a method

```java
public class Main {
    public static void main(String[] args) {
        int randNum = (int) ((Math.random()*100) +1);

        if(isEven(randNum)){
            System.out.printf("The number %d is Even",randNum);
        }else{
            System.out.printf("The number %d is Odd",randNum);
        }
    }

    //A method that determines if a number is even and if it is returns true
    //Otherwise it returns false
    1 usage
    public static boolean isEven(int someNumber){

        if(someNumber % 2 == 0){
            return true;
        }

        return false;
    }
```

First Problem

Create a class called problem1. In this class, create a method called findMax(), that finds the max number between 3 different numbers and return the max number of them. Make a main method and pass values into the method you have created and print the result.

Solution

```java
public class problem1{
    1 usage
    public static int findMax(int a, int b, int c){
        //assume the max of the three is a and test b and c against it
        int max = a;

        //testing b and c against the max - assumed to be a
        if(b > max){
            max = b;
        }

        if(c > max){
            max = c;
        }

        //returns the max of the numbers
        return max;
    }

    public static void main(String[] args) {
        //initalise three variables to pass into findMax method
        int num1 = 3, num2 = 6, num3 = 45;

        //print the result, passing the values into the findMax method in the print statement
        System.out.println("The max between these numbers is: " + findMax(num1, num2, num3));
    }
}
```

Classes and Objects

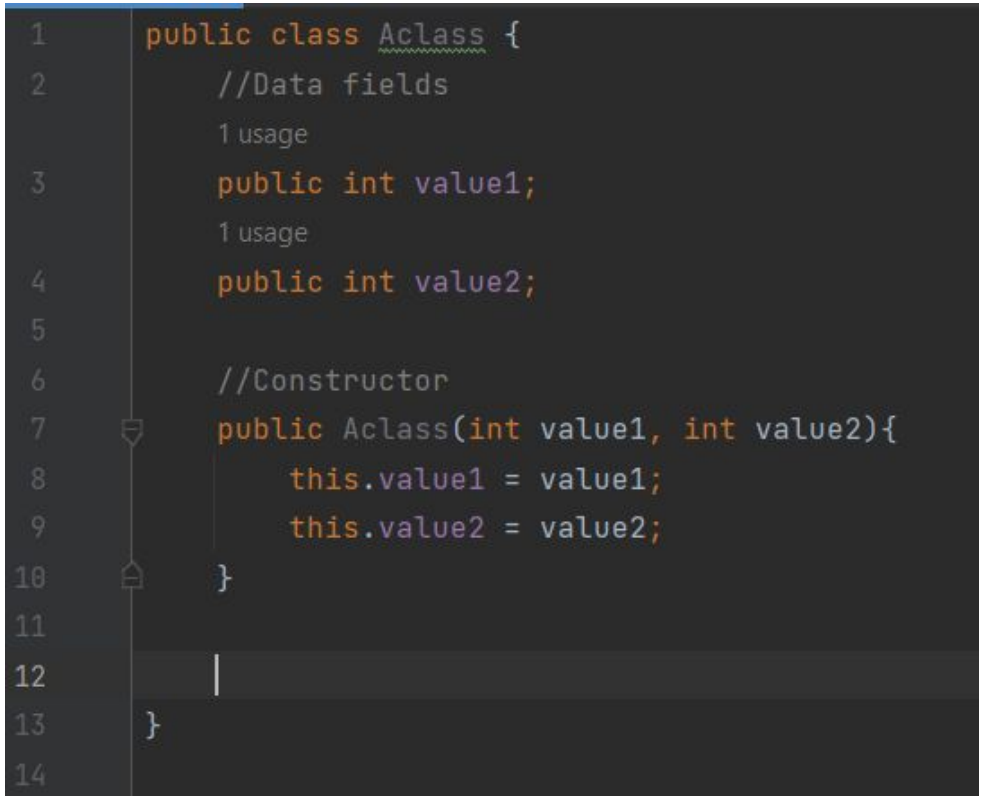
What is a class?

- A blueprint for creating objects.
- Defines a set of attributes and behaviours and object created from that class can have.
- e.g. A car must have a brand, license plate, and colour

What is an object?

- An instance of the class.
- Has its own set of properties defined in the class.
- e.g. A Red honda civic with the license plate “171 - L - 2376”

Example of a class:



```
1   public class Aclass {
2       //Data fields
        1 usage
3       public int value1;
        1 usage
4       public int value2;
5
6       //Constructor
7       public Aclass(int value1, int value2){
8           this.value1 = value1;
9           this.value2 = value2;
10      }
11
12
13  }
14
```

Second Problem

Create a java class called Car. This java class must have 3 data fields, a name, a license plate and a colour. This class must also have a constructor that creates a car object that sets the data fields as whatever are passed in as arguments. Test this by making a main method and creating a car object that is:

A purple fiat 500 with the license plate “222-T-4302”

In the car class.

Also implement a method to return this data as a string and print it to the terminal.

Solution

```
4 usages
public class Car {
    //Data fields
    2 usages
    public String name;
    2 usages
    public String colour;
    2 usages
    public String licensePlate;

    //Constructor
    2 usages
    public Car(String name,String colour,String licensePlate){
        this.name = name;
        this.colour = colour;
        this.licensePlate = licensePlate;
    }

    public String toString(){
        return name + " " + colour + " " + licensePlate;
    }


    public static void main(String[] args) {
        Car myCar = new Car( name: "Fiat 500", colour: "Purple", licensePlate: "222-T-4302");

        System.out.println(myCar.toString());
    }

}
```

Third Problem

For the third problem, implement one more method in the class that checks the name of the car. If the cars name includes “Fiat” the method will return “Honk!”. If the cars name includes “Jaguar” the method will return “Meep Meep!” and if the car is called anything else it will return “Beep Beep!”.

Call this method in the main method and print the resulting noise to the terminal.

Solution

```
4 usages
public class Car {
    //Data fields
    4 usages
    public String name;
    2 usages
    public String colour;
    2 usages
    public String licensePlate;

    //Constructor
    2 usages
    public Car(String name,String colour,String licensePlate){
        this.name = name;
        this.colour = colour;
        this.licensePlate = licensePlate;
```

Solution

```
18      public String carNoise(){
19          if(name.contains("Fiat")){
20              return "Honk!";
21          }else if(name.contains("Jaguar")){
22              return "Meep Meep!";
23          }else{
24              return "Beep Beep!";
25          }
26      }
27
28
29      public static void main(String[] args) {
30          Car myCar = new Car( name: "Fiat 500",  colour: "Purple",  licensePlate: "222-T-4302");
31
32          System.out.println(myCar.toString());
33
34          System.out.println(myCar.carNoise());
35      }
```