1. What exception does the equals throw if the string variable has no value attached to it?
   1. When comparing strings, you should make sure the string variable has some value assigned to it. If it doesn't have a value, the program will produce a NullPointerException error, which means that no value has been assigned to the variable, or that it is empty (null).
2. How does the java split method work?
   1. You can split a string to multiple pieces with the split-method of the String class. The method takes as a parameter a string denoting the place around which the string should be split.
3. How do you split “Monday Tuesday Wednesday Thursday” and how what is the resulting data structure?
   1. String[] pieces = text.split(" ");
   2. The split method returns an array of the resulting sub-parts.
4. What is the datatype of a character?
   1. char
5. How do you get character in the 7th position of a string and store it in a variable “character”?
   1. char character = string.charAt(6)
6. How can we return a Boolean if a string “text” has another string “can” inside it?
   1. text.contains("can")

Part 4

1. What are the two attributes of a class?
   1. A **class** defines the attributes of objects, i.e., the information related to them (instance variables), and their commands, i.e., their methods. The values of instance (i.e., object) variables define the internal state of an individual object, whereas methods define the functionality it offers
2. What is a method in OOP?
   1. A **Method** is a piece of source code written inside a class that's been named and has the ability to be called. A method is always part of some class
3. What is a method often used for?
   1. A method is often used is often used to modify the internal state of an object instantiated from a class.
4. What is the relationship between a class and an object?
   1. A class lays out a blueprint for any objects that are instantiated from it. The states of individual objects, i.e., their attributes, may all be different.
5. How do you create a new class in NetBeans?
   1. In NetBeans, a new class can be created by going to the projects section located on the left, right-clicking new, and then java class. The class is provided a name in the dialog that opens.
6. What are instance variables?
   1. We specify above that each object created from the Person class has a name and an age. Variables defined inside a class are called **instance variables**, or object fields or object attributes.
7. What does the keyword private mean in a class?
   1. The keyword **private** means that the variables are "hidden" inside the object. This is known as **encapsulation**. i.e. You can not change it by referencing the instance such as instance.attribute = some value
8. In a class diagram how do you signify that an attribute is encapsulated?
   1. In the class diagram, the variables associated with the class are defined as "variableName: variableType". The minus sign before the variable name indicates that the variable is encapsulated (it has the keyword private)
9. What is the purpose of a constructor?
   1. It’s a method that creates an instance of an object. It may take an input and also set some of the instance attributes.
10. How do you name a constructor?
    1. If a class is named Person then its constructor is also named Person
11. What keyword is always used when creating instances of a class?
    1. **new**, ClassName someClass = new ClassName(constructor arguments)
12. What keyword is used in the constructor to set the initial values of object attributes
    1. the constructor contains the expression this.age = 0. This expression sets the instance variable age of the newly created object (i.e., "this" object's age) to 0. The second expression this.name = initialName likewise assigns the string passed as a parameter to the instance variable name of the object created

public class Person {

private String name;

private int age;

public Person(String initialName) {

this.age = 0;

this.name = initialName;

}

}

1. What happens if no constructor is defined and you call the class Person()?
   1. If the programmer does not define a constructor for a class, Java automatically creates a default one for it. A default constructor is a constructor that doesn't do anything apart from creating the object.
2. In the default constructor what are the values given to attributes?
   1. References -> Null, Primitives -> 0
3. What are primitives (definition and examples)
   1. Primitives are basic data types of fixed size that store objects directly.
   2. int, double, boolean, char, byte, short, long, float
4. What are reference types (definition and examples)?
   1. References are variables that **store the address (reference)** of an object in memory, not the object itself.
   2. Examples include any object types, such as String, arrays, or your own classes (Person, etc.).
5. Where and how is a method written in a class?
   1. A method is written inside of the class beneath the constructor. The method name is preceded by public void, since the method is intended to be visible to the outside world (public), and it does not return a value (void).
6. What does the static keyword mean in the method modifiers **public static void**?
   1. Static methods are defined inside classes, just like instance methods.
   2. But they don’t operate on instance-specific data (unless you pass that data as parameters).
   3. They can work with primitives, references, or anything you give them — but they live inside classes.
7. How do you decide if methods inside a class should include static keyword in the modifier or not
   1. If your method needs **access to the object's fields or behavior**, it **should not** be static.
   2. If your method only works with **input parameters and doesn’t depend on any object data**, it **can be static**.
8. In the class diagram what is included in the method box (bottom) if no value is returned for a non constructor method, someMethod?
   1. The method is also marked with information indicating that it does not return a value, here someMethod(): void.