**JAVA TASKS:**

**Programming basics - Classpath**

1. What is a process and what is a thread?

 2. Open Task Manager and observer the running processes and its attributes like process ID, memory used, cpu used, disk usage, network usage and number of threads. And understand what these numbers mean.

3. What are Environmental Varaibles? Significance of PATH variables

4. Difference between 32 bit and 64 bit applications

5. Write a small java program (say a "Hello World" program) and put it in a directory. Compile the program and change directory to some other directory and try to execute the class file (This will help you to learn about setting PATH/CLASSPATH variables!).

**Code:**

class hello

{

public static void main(String[] args)

{

System.out.println("Hello World");

}

}

**javac –release 8 HelloWorld.java**

**java HelloWorld**

6. Write a java program to print the size of different data types in java (list all the data types!). <https://docs.oracle.com/javase/8/docs/api/java/lang/Integer.html>

<https://www.geeksforgeeks.org/how-to-get-size-minimum-and-maximum-value-of-data-types-in-java/>

7. Write a program to read Input data from command line.

8. Write a class with a package statement in it and try to run it.

**javac --release 8 -d . PackageStatement.java**

**java sample.PackageStatement**

9. Write two classes (say "A" and "B") , in class "A" create an instance of class "B". Compile class "A" in some directory "D1" and class "B" in "D2" , now A.class and B.class are in two separate directories. Try to run class "A" from directory "D1"; (it will say class "B" not found). If you set classpath to both directories then it will work (try it out!)

**javac --release 8 -d ./D1 A.java**

**java -cp ././D2/;./D1/; A**

10. Set the classpath from the class "A" itself (instead of specifying the classpath in the DOS shell , try to set in in your java prog!)

<https://docs.oracle.com/javase/8/docs/api/java/net/URLClassLoader.html>

<https://examples.javacodegeeks.com/core-java/net/urlclassloader/java-net-urlclassloader-example/>

<https://stackoverflow.com/questions/18023870/java-lang-nosuchmethodexception-userauth-user-init/46295874>

11. Try to learn the difference between String and StringBuffer classes by writing small programs.

 12. Write java program to reverse a string using StringBuffer class (do not use String class for data manipulation!)

**Access Specifiers**

<https://beginnersbook.com/2013/05/java-access-modifiers/>

1. Learning about access specifiers (Write java programs to bring about the difference between , public ,private,package and protected specifiers!)

2. What is the meaning of declaring a class public? (try this by putting the class in a package and try to access the class from a different package!).

3. Learning about scope specifiers also what is the difference between instance variable and class variable? Write programs and try using local scope/method scope/member scope variables and how to access them.

<https://www.baeldung.com/java-variable-scope>

<https://www.upgrad.com/blog/scope-of-a-variable-in-java/>

4. Write a java program to print the system properties (Hint : Refer to System class) Try to print the current working directory from you java program.

<https://www.geeksforgeeks.org/getproperty-and-getproperties-methods-of-system-class-in-java/>

<https://www.tutorialspoint.com/get-the-current-working-directory-in-java>

5. Is the method main belong to any class? , if not why? , if so what are the access privileges to that method?

<https://howtodoinjava.com/java/basics/main-method/>

<https://www.geeksforgeeks.org/valid-variants-main-java/>

It does belong to a class. Look at any hello-world implementation and it would be clear to you.

public static void main(String[] args) {

System.out.println("Hello World");

}

won't compile as it stands. You need to put class HelloWorld { ... } around it, in which case you may say that the main method "belongs" to the HelloWorld class. However, since it's **static**, it **does not belong to any particular object**

6. Is it possible to have a private class? (write a class and try it out! , try protected also!)

Classes and Interfaces cannot be declared as private.

Reason: If a class is set private we cannot instantiate object of the class from outside the class.

7. Is it possible to have a private constructor? (write a class and try it out! ) , if possible how do you create an instance of it from another class?

Yes. Class can have private constructor. Even abstract class can have private constructor. By making constructor private, we prevent the class from being instantiated as well as subclassing of that class.

<http://www.javapractices.com/topic/TopicAction.do?Id=40>

8. What is the meaning of declaring a variable "static" ? (write a program to bring out the difference between instance and class variables).

9. What is the meaning of declaring a method "static" ? how do you invoke such a method ?

10. What is the meaning of declaring a class static?

<https://www.geeksforgeeks.org/static-keyword-in-java/>

<https://www.geeksforgeeks.org/static-class-in-java/>

<https://www.geeksforgeeks.org/static-blocks-in-java/>

11. What is the meaning of declaring a class final?

<https://www.geeksforgeeks.org/final-keyword-in-java/>

12. How do you prevent overriding of a method (can you prevent overloading of a method? - NO)

<https://www.geeksforgeeks.org/different-ways-to-prevent-method-overriding-in-java/>

13. What are inner classes and anonymous classes? Why they are used?

<https://www.geeksforgeeks.org/inner-class-java/?ref=lbp>

<https://www.geeksforgeeks.org/anonymous-inner-class-java/?ref=lbp>

14. Is there any difference between an inner class and nested class?

<https://www.geeksforgeeks.org/nested-classes-java/?ref=lbp>

**Advanced Concepts**

1. Convert a float value to an integer (float to double etc.) (Hint use wrapper classes, do not typecast them!).

<https://www.javatpoint.com/wrapper-class-in-java>

<https://www.javatpoint.com/java-float>

1. Function overriding & overloading ( Write a set of classes to bring out the difference!)
2. Write a class and override "toString" method in the class object. (When you write a class "A" does it have any parent? , investigate!).

<https://www.geeksforgeeks.org/object-tostring-method-in-java/>

<https://www.javatpoint.com/understanding-toString()-method>

1. What is an abstract class , why it is used ? (Write an abstract and try to use it!).

<https://www.geeksforgeeks.org/abstract-classes-in-java/>

1. Write an interface and try to bring out diff. between abstract class and an interface! (can I define variables in interfaces?)
2. What is the difference between a Hashtable and Properties? (Write a program as an example!)

Properties is the subclass of HashTable.  
The difference is Properties have both key and value String Object only.  
But in HashTable we can put any object as key and value.

7. Write a program to print all elements in a Properties object (Using Enumeration!)

<https://www.techiedelight.com/print-all-keys-values-from-properties-file-java/>

<https://www.geeksforgeeks.org/java-util-properties-class-java/>

8. Can you remove an element while enumerating through a Properties object? (If so how? If not how will i remove a element while enumerating!)

<https://stackoverflow.com/questions/2927977/can-i-remove-an-element-while-enumerating-through-a-properties-object>

<https://javahungry.blogspot.com/2013/06/difference-between-iterator-and-enumeration-collections-java-interview-question-with-example.html>

9. How to you catch an exception? Write a program to catch a NullPointerException!

<https://www.javatpoint.com/how-to-avoid-null-pointer-exception-in-java>

<https://www.geeksforgeeks.org/null-pointer-exception-in-java/>

10. How do you throw an exception?

<https://www.javatpoint.com/throw-keyword>

11. What is the difference between an Error and an Exception?

<https://www.geeksforgeeks.org/errors-v-s-exceptions-in-java/>

12. In java are the parameters passed by reference or by value (Write a program to test for basic data types , arrays ,strings ,string arrays and custom objects !)

<https://www.javatpoint.com/call-by-value-and-call-by-reference-in-java>

<https://ibytecode.com/blog/passing-string-as-parameter-to-a-method/>

<https://www.geeksforgeeks.org/passing-and-returning-objects-in-java/>

**I/O Operations**

1. Bring out differences between char streams and byte streams.

<https://www.geeksforgeeks.org/character-stream-vs-byte-stream-java/>

1. What is the format of char data type and why it is platform independent?

<https://www.java-samples.com/showtutorial.php?tutorialid=262>

<https://examples.javacodegeeks.com/java-char-primitive-type-example/>

1. How do you convert char streams to byte streams.

<https://www.javatpoint.com/java-outputstreamwriter-class>

<https://stackoverflow.com/questions/30140692/convert-character-stream-to-byte-stream-and-byte-stream-to-character-stream>

1. Write a program to read from a lengthy string (using streams) and write the output to a file.

<https://stackoverflow.com/questions/32452879/write-a-java-program-to-read-from-a-lengthy-string-using-streams-and-write-the>

1. Write a program to redirect your print statements (System.out and System.err) to two files stdout.txt and stderr.txt.

<https://www.geeksforgeeks.org/redirecting-system-out-println-output-to-a-file-in-java/>

<http://www.avajava.com/tutorials/lessons/how-do-i-redirect-standard-error-to-a-file.html>

1. Write a program to read a text file (using byte streams) convert the bytes to chars and print the output.

<https://www.javatpoint.com/java-inputstreamreader-class>

<https://docs.oracle.com/javase/8/docs/api/java/io/InputStreamReader.html>

<https://www.geeksforgeeks.org/inputstreamreader-class-in-java/>

7.Write a program to get the result for the following

In a school(1-10),each class is maintaining a file having data about all the students in a format (Roll###Name###Age###phone).Principal want to generate a file containing data of all the students who is above 10 years old in a format(Name##Age##phone##class)