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| C:\Users\logon\Desktop\download.jfif | DEPARTMENT OF COMPUTER ENGINEERING |

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| Subject: JAVA PROGRAMMING | Subject Code:22412 |
| Semester:4th Semester | Course: Computer Engineering |
| Laboratory No: L001A | Name of Subject Teacher: PRADEEP SHIRKE |
| Name of Student: ADITYA G. MAKWANA | Roll Id: 22203A0042 |

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| Experiment No: | 1 AND 2 |
| Title of Experiment | SETUP JAVA PROGRAMMING DEVELOPMENT ENVIRONMENT AND TEST USING SMALL PROGRAM |

**X. PRACTICAL RELATED QUESTIONS**

1. **Write installation directory path of your directory?**

**ANS:** C:\Users\logon\Desktop\Java\jdk1.8.0\_181

1. **Write value of your path environment variable?**

**ANS:** C:\Users\logon\Desktop\Java\jdk1.8.0\_181\bin

1. **List folders created after installation?**

**ANS:**

1. **Main method is declared as static. justify?**

**ANS:**

* **For static members the memory is allocated at the start of the program**
* **So, to access**

**JAVA PROGRAM EXECUTION STARTS FROM MAIN FUNCTION WHICH IS PRESENT INSIDE THE CLASS, and the file is saved by same name as class in which main method is present**

1. **Program is named with class containing main method. Justify?**

**ANS:**

**X1. EXERCISE**

1. **Write the options provided by following JDK tools along with their use**

**ANS:**

1. **Java**

C:\Users\logon\Desktop\ADITYA (22203A0042)>java

Usage: java [-options] class [args...]

(to execute a class)

or java [-options] -jar jarfile [args...]

(to execute a jar file)

where options include:

-d32 use a 32-bit data model if available

-d64 use a 64-bit data model if available

-client to select the "client" VM

-server to select the "server" VM

The default VM is client.

-cp <class search path of directories and zip/jar files>

-classpath <class search path of directories and zip/jar files>

A ; separated list of directories, JAR archives,

and ZIP archives to search for class files.

-D<name>=<value>

set a system property

-verbose:[class|gc|jni]

enable verbose output

-version print product version and exit

-version:<value>

Warning: this feature is deprecated and will be removed

in a future release.

require the specified version to run

-showversion print product version and continue

-jre-restrict-search | -no-jre-restrict-search

Warning: this feature is deprecated and will be removed

in a future release.

include/exclude user private JREs in the version search

-? -help print this help message

-X print help on non-standard options

-ea[:<packagename>...|:<classname>]

-enableassertions[:<packagename>...|:<classname>]

enable assertions with specified granularity

-da[:<packagename>...|:<classname>]

-disableassertions[:<packagename>...|:<classname>]

disable assertions with specified granularity

-esa | -enablesystemassertions

enable system assertions

-dsa | -disablesystemassertions

disable system assertions

-agentlib:<libname>[=<options>]

load native agent library <libname>, e.g. -agentlib:hprof

see also, -agentlib:jdwp=help and -agentlib:hprof=help

-agentpath:<pathname>[=<options>]

load native agent library by full pathname

-javaagent:<jarpath>[=<options>]

load Java programming language agent, see java.lang.instrument

-splash:<imagepath>

show splash screen with specified image

See http://www.oracle.com/technetwork/java/javase/documentation/index.html for more details.

1. **Javac**

C:\Users\logon\Desktop\ADITYA (22203A0042)>javac

Usage: javac <options> <source files>

where possible options include:

-g Generate all debugging info

-g:none Generate no debugging info

-g:{lines,vars,source} Generate only some debugging info

-nowarn Generate no warnings

-verbose Output messages about what the compiler is doing

-deprecation Output source locations where deprecated APIs are used

-classpath <path> Specify where to find user class files and annotation processors

-cp <path> Specify where to find user class files and annotation processors

-sourcepath <path> Specify where to find input source files

-bootclasspath <path> Override location of bootstrap class files

-extdirs <dirs> Override location of installed extensions

-endorseddirs <dirs> Override location of endorsed standards path

-proc:{none,only} Control whether annotation processing and/or compilation is done.

-processor <class1>[,<class2>,<class3>...] Names of the annotation processors to run; bypasses default discovery process

-processorpath <path> Specify where to find annotation processors

-parameters Generate metadata for reflection on method parameters

-d <directory> Specify where to place generated class files

-s <directory> Specify where to place generated source files

-h <directory> Specify where to place generated native header files

-implicit:{none,class} Specify whether or not to generate class files for implicitly referenced files

-encoding <encoding> Specify character encoding used by source files

-source <release> Provide source compatibility with specified release

-target <release> Generate class files for specific VM version

-profile <profile> Check that API used is available in the specified profile

-version Version information

-help Print a synopsis of standard options

-Akey[=value] Options to pass to annotation processors

-X Print a synopsis of nonstandard options

-J<flag> Pass <flag> directly to the runtime system

-Werror Terminate compilation if warnings occur

@<filename> Read options and filenames from file

1. **Javadoc**

C:\Users\logon\Desktop\ADITYA (22203A0042)>javadoc

javadoc: error - No packages or classes specified.

Usage: javadoc [options] [packagenames] [sourcefiles] [@files]

-overview <file> Read overview documentation from HTML file

-public Show only public classes and members

-protected Show protected/public classes and members (default)

-package Show package/protected/public classes and members

-private Show all classes and members

-help Display command line options and exit

-doclet <class> Generate output via alternate doclet

-docletpath <path> Specify where to find doclet class files

-sourcepath <pathlist> Specify where to find source files

-classpath <pathlist> Specify where to find user class files

-cp <pathlist> Specify where to find user class files

-exclude <pkglist> Specify a list of packages to exclude

-subpackages <subpkglist> Specify subpackages to recursively load

-breakiterator Compute first sentence with BreakIterator

-bootclasspath <pathlist> Override location of class files loaded

by the bootstrap class loader

-source <release> Provide source compatibility with specified release

-extdirs <dirlist> Override location of installed extensions

-verbose Output messages about what Javadoc is doing

-locale <name> Locale to be used, e.g. en\_US or en\_US\_WIN

-encoding <name> Source file encoding name

-quiet Do not display status messages

-J<flag> Pass <flag> directly to the runtime system

-X Print a synopsis of nonstandard options and exit

Provided by Standard doclet:

-d <directory> Destination directory for output files

-use Create class and package usage pages

-version Include @version paragraphs

-author Include @author paragraphs

-docfilessubdirs Recursively copy doc-file subdirectories

-splitindex Split index into one file per letter

-windowtitle <text> Browser window title for the documentation

-doctitle <html-code> Include title for the overview page

-header <html-code> Include header text for each page

-footer <html-code> Include footer text for each page

-top <html-code> Include top text for each page

-bottom <html-code> Include bottom text for each page

-link <url> Create links to javadoc output at <url>

-linkoffline <url> <url2> Link to docs at <url> using package list at <url2>

-excludedocfilessubdir <name1>:.. Exclude any doc-files subdirectories with given name.

-group <name> <p1>:<p2>.. Group specified packages together in overview page

-nocomment Suppress description and tags, generate only declarations.

-nodeprecated Do not include @deprecated information

-noqualifier <name1>:<name2>:... Exclude the list of qualifiers from the output.

-nosince Do not include @since information

-notimestamp Do not include hidden time stamp

-nodeprecatedlist Do not generate deprecated list

-notree Do not generate class hierarchy

-noindex Do not generate index

-nohelp Do not generate help link

-nonavbar Do not generate navigation bar

-serialwarn Generate warning about @serial tag

-tag <name>:<locations>:<header> Specify single argument custom tags

-taglet The fully qualified name of Taglet to register

-tagletpath The path to Taglets

-charset <charset> Charset for cross-platform viewing of generated documentation.

-helpfile <file> Include file that help link links to

-linksource Generate source in HTML

-sourcetab <tab length> Specify the number of spaces each tab takes up in the source

-keywords Include HTML meta tags with package, class and member info

-stylesheetfile <path> File to change style of the generated documentation

-docencoding <name> Specify the character encoding for the output

1. **List different versions of jdk?**

**ANS:**

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| **Version** | **Release date** |
| JDK 1.0 | 23rd January 1996 |
| JDK 1.1 | 18th February 1997 |
| J2SE 1.2 | 4th December 1998 |
| J2SE 1.3 | 8th May 2000 |
| J2SE 1.4 | 13th February 2002 |
| J2SE 5.0 | 30th September 2004 |
| Java SE 6 | 11th December 2006 |
| Java SE 7 | 28th July 2011 |
| Java SE 8 (LTS) | 18th March 2014 |
| Java SE 9 | 21st September 2017 |
| Java SE 10 | 20th March 2018 |
| Java SE 11 (LTS) | 25th September 2018 |
| Java SE 12 | 19th March 2019 |
| Java SE 13 | 17th September 2019 |
| Java SE 14 | 17th March 2020 |
| Java SE 15 | 16th September 2020 |
| Java SE 16 | 16th March 2021 |
| Java SE 17 (LTS) | 14th September 2021 |
| Java SE 18 | 22nd March 2022 |
| Java SE 19 | 20th September 2022 |
| Java SE 20 | 21st March 2023 |
| **Java SE 21 (LTS)** | 19th September 2023 |
| Java SE 22 | 19th March 2024 |

**ANS:**

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| **Grade and Dated Signature of Teacher** | **Process Related**  **(35)** | **Product Related**  **(15)** | **Dated Sign** |
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