EXPERIMENT NO. 6

1. What is package and what is its use?

Ans**:** Package in JAVA is a mechanism to encapsulate a group of classes, sub packages and interfaces. JAVA package provides access protection and namespace management.

Packages are categorized as:

1) **Built-in packages** (Standard packages which comes as a part of Java Runtime Environment).
2) **User-defined packages** (packages defined by programmers to bundle group of related classes).

Use of Packages:

- To achieve reusability.
- JAVA package is used to categorize the classes and interfaces so that they can be easily maintained.
- JAVA package removes naming collision. For example there can be two classes with name Employee in two packages, college.staff.it.Employee and college.staff.cse.Employee.
- Packages can be considered as data encapsulation.
- To provide controlled access: protected and default have package level access control

2. What is classpath variable? And how to set classpath?

Ans: The classes belonging to a specific package are stored together in the same directory. Furthermore, they are stored in sub-directory structure specified by its package name. For e.g. college.dept.it is stored as "$Base_Dir/college/dept/it/Employee.class".

The base directory ($Base_Dir) could be located anywhere in the file system. Hence, the JAVA compiler and runtime must be informed about the location of $Base_Dir so this is accomplished by an environment variable called **CLASSPATH.** CLASSPATH is used by the command shell to search for executable programs.

Setting CLASSPATH:

- CLASSPATH can be set temporarily for particular CMD shell session by issuing the following command:

  >SET CLASSPATH=.;c:\javaproject\classes

- CLASSPATH can be set permanently in the environment: In Windows

"Control panel→system→Advanced→Environment Variable→choose system variable/user variable→choose edit→enter CLASSPATH as the variable name".

3. What are the standard packages in JAVA? List out some packages?

Ans: As name suggests standard packages are the packages consists of a large number of classes which are a part of JAVA **API**. For e.g. we use **java.io** package which contains classes to support i/o operations in JAVA.

Some standard packages are:

Package Name	Description
java.lang	Contains language support classes (for e.g. classes which defines primitive data types, math operations, etc.). This package is automatically imported.
java.io	Contains classes for supporting input/output operations.
java.util	Contains utility classes which implement data structures like Linked List, Hash Table, Dictionary, etc and support for Date/time operations.
java.applet	Contains classes for creating Applets.
java.awt	Contains classes for implementing the component of graphical user interface (like buttons, menus etc.)
java.net	Contains classes for supporting networking operations.

4. What is API?

Ans: An Application Programming Interface (API), in the context of JAVA, is a collection of prewritten packages, classes and interfaces with their respective methods, fields and constructors. In JAVA, most basic programming tasks are performed by the API's classes and packages, which are helpful in minimizing the number of lines written within pieces of code

5. What is jar in JAVA? How to create jar file and how to use it?

Ans: A JAR (Java Archive) is a package file format typically used to aggregate many Java class files and associated metadata and resources (text, images, etc) into one file to distribute application software or libraries on the JAVA platform. In simple words, a JAR file is a compressed version of .class files, audio files, directories.

- Creating a jar file:
  To create a .jar file, we can use jar cf command in the following way:
  Command→ jar cf jarfilename inputfiles
  c:\> jar cf pack.jar pack

- Extracting a jar file:
  To extract the files from a .jar file, we can use:
  Command→ jar xf jarfilename
  C:\> jar xf pack.jar

- Running a jar file:
  In order to run an application packaged as a jar file following command can be used:
  C:\> java –jar pack.jar

6. What is module in JAVA? Give an example.

Ans: A JAVA Module is a mechanism to package up your JAVA application and JAVA packages into java modules. A Java module is one or more JAVA packages that belong together. A module could be either full Java application, a Java platform, or a third party API.

7. What is use of default access specifier?

Ans: JAVA provides a default access specifier which is used when no access modifier is present. Any class, field, method or constructor that has no declared access modifier is accessible only by classes in the same package.