**QUE-15.2- Explain the working and the differences between Maven, Gradle and SBT in detail.**

***ANS-15.2-*** DIFFERENCE BETWEEN THE WORKING OF MAVEN,GRADLE AND SBT IS DISSCUSSED BELOW-

***Maven-***

Maven is a "build management tool", it is for defining how your .java files get compiled to .class, packaged into .jar files, processed with tools, managing your CLASSPATH, and all others sorts of tasks that are required to build your project. It is similar to Apache Ant or Gradle or Makefiles in C/C++, but it attempts to be completely self-contained in it that you shouldn't need any additional tools or scripts by incorporating other common tasks like downloading & installing necessary libraries etc.

It is also designed around the "build portability" theme, so that you don't get issues as having the same code with the same buildscript working on one computer but not on another one.

***Gradle-***

Gradle is another build system that takes the best features from other build systems and combines them into one. It is improved based off of their shortcomings. It is a JVM based build system, what that means is that you can write your own script in Java, which Android Studio makes use of.

One cool thing about gradle is that it is a plugin based system. This means if you have your own programming language and you want to automate the task of building some package from sources then you can write a complete plugin in Java or Groovy, and distribute it to rest of world.

***SBT-***

SBT is an open source build tool for Scala and Java projects, similar to Java's Maven or Ant.

Its main features are-

* Native support for compiling Scala code and integrating with many Scala test frameworks
* Build descriptions written in Scala using a DSL
* Dependency management using Ivy (which supports Maven-format)
* Continuous compilation, testing, and deployment
* Integration with the Scala interpreter for rapid iteration and debugging
* Support for mixed Java/Scala projects

SBT is the de facto build tool in the Scala community.

***DIFFERENCES –***

SBT is very simple and it is focused on Scala it relies on Ivy for dependency management. Maven is a great build tool and it enables to control the entire software lifecycle with XML files. Using the Project Object Model we can intercept all points of the software lifecycle from compile to test, packaging and deploy. Maven has its own dependency manager. The bad issue in Maven is the XML syntax, writing a POM can be annoying and too much expensive.

On the other hand Gradle is built on top of Maven, Ant and Ivy. It uses Maven repositories. Gradle doesn't use XML, it's a polyglot build tool. It combines the Ant API with the Groovy language to enable developers to write a build script with an intuitive DSL. With a few lines of code you can write a Gradle build script that can do the same things that Maven can do. With Gradle we can define our own task with the Groovy language and intercept programmatically our build execution. This functional approach is not for all developers, infact Maven it's good if we don't want this behaviour in our build environment. Both Maven and Gradle have plugins to integrate our build with technologies used in our projects.