1.With suitable diagram explain in detail about steps involved in executing SQLJ Translator component.  
1. The JVM invokes the SQLJ translator.

ANSWER 1: The SQLJ translator is a tool that translates SQLJ source files into Java source files. [The translation process replaces embedded SQL statements with calls to the SQLJ run time, which processes the SQL statements**1**](https://docs.oracle.com/en/database/oracle/oracle-database/19/jsqlj/intro-to-SQLJ.html). The SQLJ translator is invoked by the JVM. The translation process consists of several phases. In the first phase, a SQLJ parser and a Java parser are used to process all the source code and check syntax. [As the SQLJ translator parses the .sqlj file, it invokes a Java parser to check the syntax of Java statements and a SQLJ parser to check the syntax of SQLJ constructs (anything preceded by #sql)**2**](https://docs.oracle.com/cd/B10500_01/java.920/a96655/transrun.htm). [In the second phase, the SQLJ translator checks the semantics of the SQL statements and generates Java code that corresponds to each SQL statement**2**](https://docs.oracle.com/cd/B10500_01/java.920/a96655/transrun.htm). [In the third phase, the generated Java code is compiled into bytecodes**3**](https://www.ibm.com/docs/en/db2-for-zos/11?topic=preparation-sqlj-sqlj-translator). [Finally, in the fourth phase, profile customization is performed](https://docs.oracle.com/en/database/oracle/oracle-database/21/jsqlj/translator-run-time-functionality.html)

2. The translator parses the SQLJ and Java code in the .sqlj file, checking for proper SQLJ syntax  
and looking for type mismatches between the declared SQL data types and corresponding Java host variables. Host variables are Java local variables that are used as input or output parameters in SQL operations.

ANSWER 2: Yes, that’s correct. The SQLJ translator parses the SQLJ and Java code in the .sqlj file, checking for proper SQLJ syntax and looking for type mismatches between the declared SQL data types and corresponding Java host variables. Host variables are Java local variables that are used as input or output parameters in SQL operations.  
3. Depending on the SQLJ option settings, the translator invokes the online semantics-checker,the offline parser, neither, or both. This is to verify syntax of embedded SQL and PL/SQL statements and to check the use of database elements in the code against an appropriate database schema, for online checking. Even when neither is specified, some basic level of checking is performed.

ANSWER 3: Yes, that’s correct. Depending on the SQLJ option settings, the translator invokes the online semantics-checker, the offline parser, neither, or both. This is to verify syntax of embedded SQL and PL/SQL statements and to check the use of database elements in the code against an appropriate database schema, for online checking. Even when neither is specified, some basic level of checking is performed.

4. When online checking is specified, SQLJ will connect to a specified database schema to verify  
that the database supports all the database tables, stored procedures, and SQL syntax that  
the application uses. It also verifies that the host variable types in the SQLJ application are  
compatible with data types of corresponding database columns.  
For Oracle-specific SQLJ code generation (-codegen=oracle, which is default), SQL operations  
are converted directly into Oracle JDBC calls.

5. The JVM invokes the Java compiler, which is usually, but not necessarily, the  
standard javac provided with the Sun Microsystems JDK.  
6. The compiler compiles the Java source file generated in Step 4 and produces Java .class files  
as appropriate. This will include a .class file for each class that is defined, each of the SQLJ  
declarations.  
7.

Generated Java code is put into a .java output file containing the following:  
• Any class definitions and Java code from the. sqlj source file  
• Class definitions created as a result of the SQLJ iterator and connection context  
declarations  
• Calls to Oracle JDBC drivers to implement the actions of the embedded SQL  
operations

