**Design Documentation**

**Assignment 3**

In this assignment i have made the java file to download the jar file from url and extract its details.

* I have used nio pacakge to download the given jar file locally and saved in the current directory under the name "output.jar".
* I initially created and cleared the output.txt file to print all the results.
* In my readJar function I have used BufferOutputStream,BufferInputStream and FileOutputStream for reading and writing in the files.
* I have iterated through the jar file using enumeration and used it to iterate through the Jar entries then i scanned only through the ".class " files.Then i have called the Javap command line using the Runtime and Process classes and their input is read by BufferedReader line by line.
* I ran the javap command with -verbose flag to get the details about constant pool and JVM instructions.

“javap -verbose -classpath output.jar Classpath(except ending .class)”

* I have matched the line with the pattern “ [ ]\*#Int: \* ” to compare with the entries in constant pool.To get the number of elements in constant pool by finding the maximum Int in the buffer for each class.

* I have matched the line with the pattern “ [ ]\*Int:.\* ” to compare with the entries in JVM instructions.To get the statistics about the classes i have created a Map to store the Instruction name and their occurrences for every class.I later use the Heap(Priority Queue ) to get the best 50 JVM instructions if present after iterating through all the class files present and adding the JVM instructions in map.

* I ran the javap command with -p flag to get the details about all methods in java files(-p for private functions too).

“javap -p -classpath output.jar Classpath(exceptending .class)”

* I have matched the line with the pattern “.\*).\*;” to compare with the methods in classes and increment number\_methods (static int) to compute the average at end.

* I have used java .split method to extract various parts from input stream.

* I have made write\_file function which uses FileOutputStream to append results to “output.txt” i added the results in the file.