QUINE MCCLUSKEY SOLVER:

USER MANUAL

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1 INTRODUCTION

1.1 The Quine McCluskey Method

The Quine-McCluskey algorithm is an algorithm that is used to simplify Boolean functions and expressions along with algebraic manipulation, Karnaugh mapping et cetera. This algorithm is best used for simplifying Boolean functions with six variables or more (the other two can also be used but it can be a daunting task to do if these are the methods applied). The developers created a program that will solve Boolean expressions using the Quine-McCluskey algorithm.

CS 130: Logic Gates and Circuit Design

2 INSTALLATION OF JAVA AND IDE

2.1 JDK and JRE packages

Install the Java package from the Internet. Strictly choose JDK 1.8 and JRE 1.8 or else it will not run. Visit the following websites: `https://www.oracle.com/java/technologies/javase-jdk8-downloads.html` and `https://www.oracle.com/java/technologies/javase-jre8-downloads.html`.

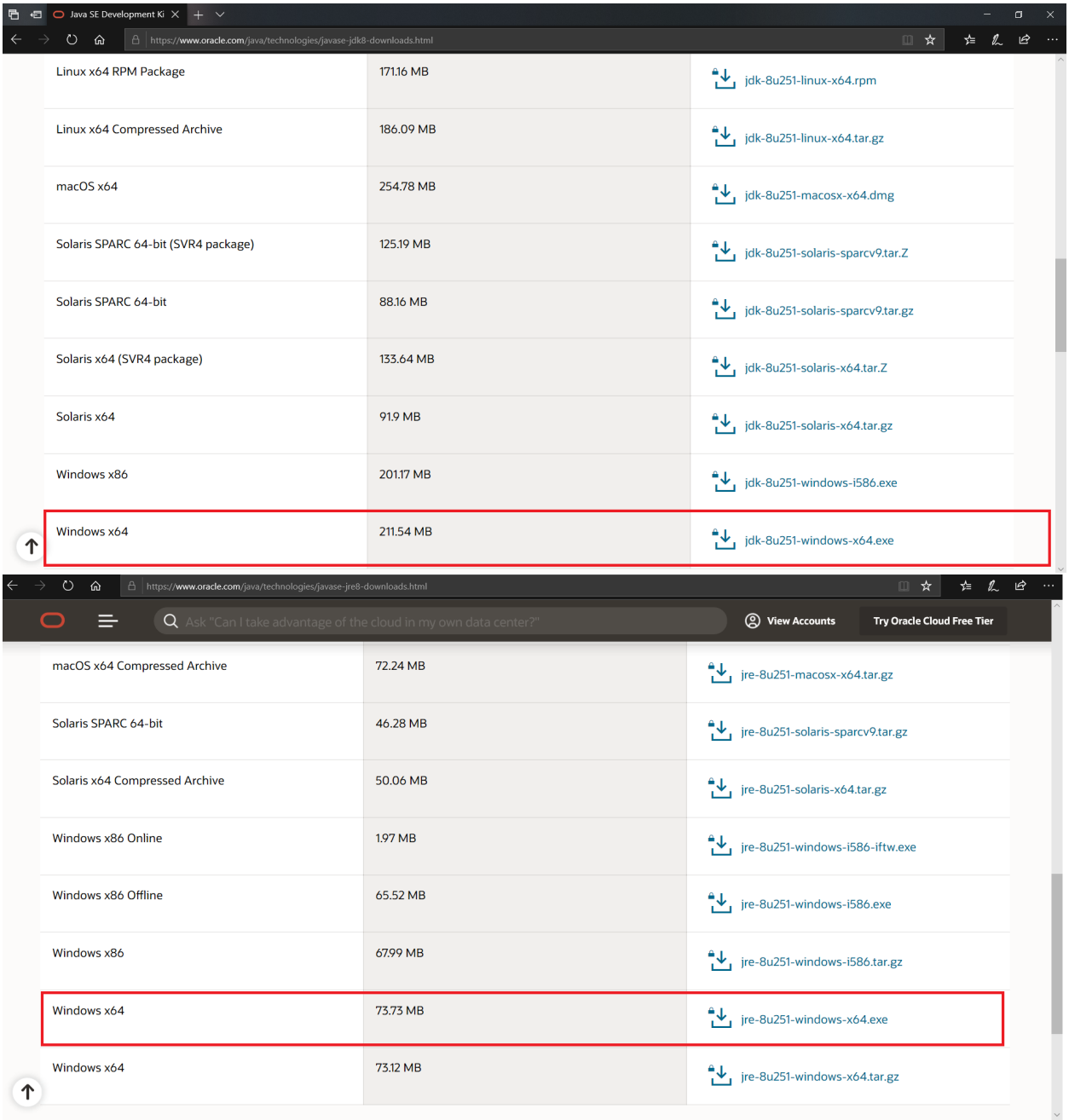

Figure 1: JDK and JRE 1.8.0 download

2.1.1 *Updating the Class Path*

If you do not set the PATH variable, you need to specify the full path to the executable file every time you run it. It is useful to set the PATH variable permanently so it will persist after rebooting. To set the PATH variable permanently, add the full path of the jdk1.8.0. Set the PATH variable as follows on Microsoft Windows:

1. Click Start, then Control Panel, then System.
2. Click Advanced System Settings, then Environment Variables.
3. Add the location of the bin folder of the JDK installation to the PATH variable in System Variables. The following is a typical value for the PATH variable:

```
C:\WINDOWS\system32;C:\WINDOWS;C:\Program Files\Java\jdk1.8.0\bin
```

Note:

- The PATH environment variable is a series of directories separated by semicolons (;) and is not case-sensitive. Microsoft Windows looks for programs in the PATH directories in order, from left to right.
- You should only have one bin directory for a JDK in the path at a time. Those following the first instance are ignored.
- If you are not sure where to add the JDK path, append it. The new path takes effect in each new command window you open after setting the PATH variable.

3 STARTING THE PROGRAM

There are three ways of running the program: via **Command Prompt, Executable file** or an **IDE**.

3.1 Via Command Prompt

1. Open the command prompt on your device (to open, press the Start button, search 'cmd' on the search bar, and press enter).
2. Once the command prompt has opened, type 'cd' <space> the destination folder of the source codes. Press Enter afterwards. The typical syntax would be:

```
cd C:\Users\Klowee Po\eclipse-workspace\CS130-MP-FX\src
```

3. You are now inside the folder wherein the source codes are located. Type 'javac' <space> filename.java (e.g. javac Main.java). In the source code, you should run the code with the filename 'Main'. Press enter afterwards. **Note: It is important to compile in the directory of the package containing the classes.**

```
C:\Users\Klowee Po\eclipse-workspace\CS130-MP-FX\src>javac application\Main.java
```

4. The JRE will compile the codes once you press enter. A new line will appear once the JRE has successfully compiled the program. Type 'java' <space> filename then press enter. **Note: It is important to indicate the package name.**

```
C:\Users\Klowee Po\eclipse-workspace\CS130-MP-FX\src>java application.Main
```

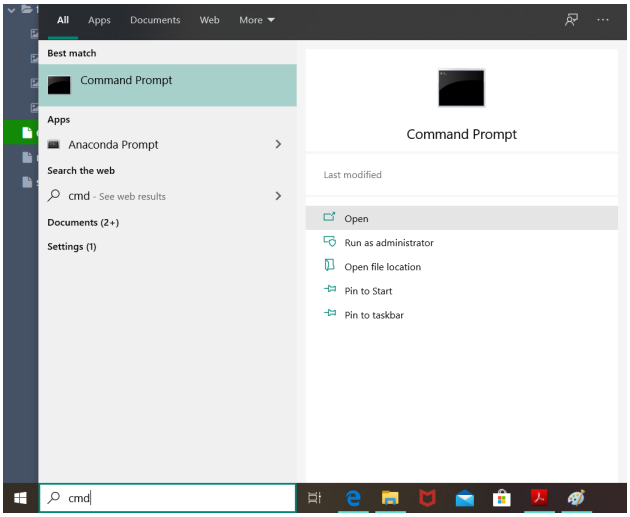

Figure 2: Locating the command prompt.

3.2 Loading the Executable File

Upon reaching the location of the Executable File, run the program by double-clicking the file. This is for ease of use for those who are only interested in using the program alone.

3.3 Via an IDE

1. Install an IDE that supports Java (the developers prefer Eclipse IDE). To install eclipse, follow `https://www.eclipse.org/downloads/packages/installer`.
2. Open the IDE.
3. Import the folder where the source codes are located. Click File > Open Projects from File System then select the folder where the source codes are located.

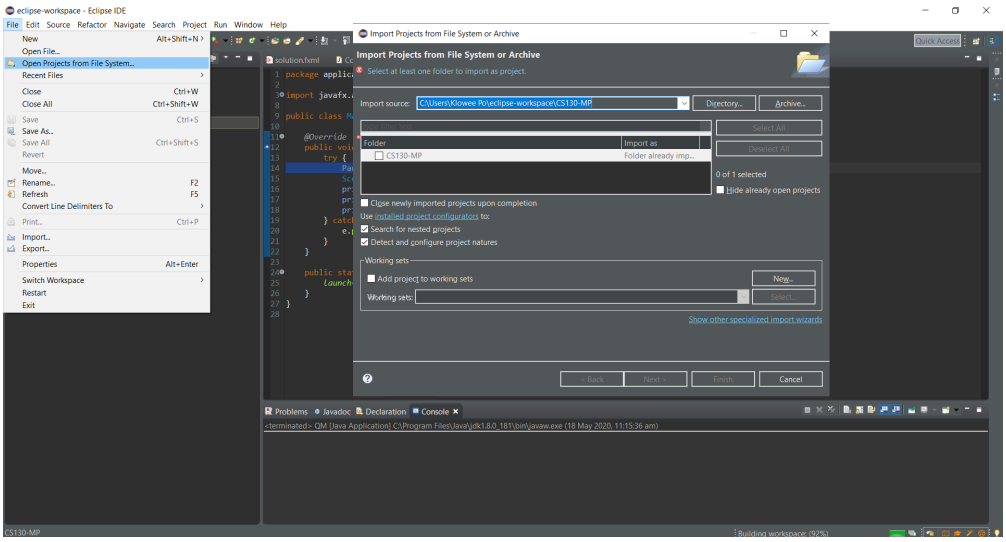

Figure 3: Importing a project in Eclipse IDE

4. Run the project.

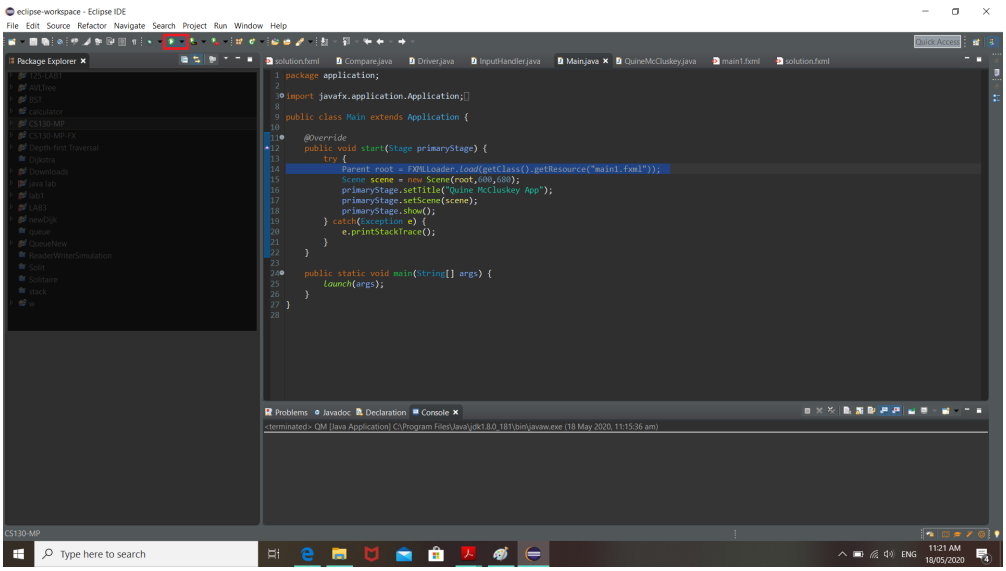

Figure 4: Running a project in Eclipse IDE

4 RUNNING THE PROGRAM

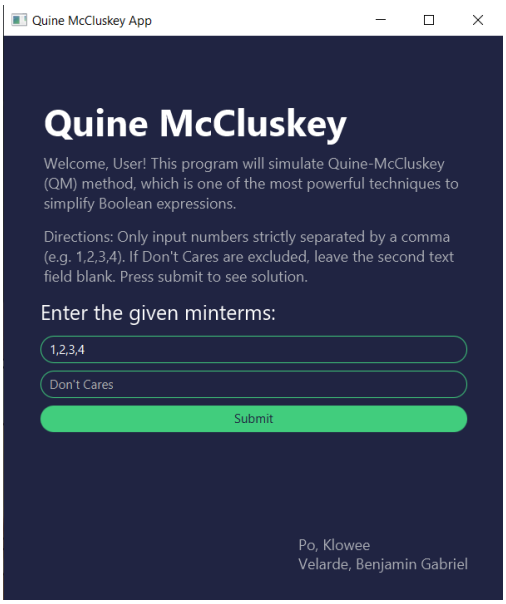

Figure 5: Using the program

1. Input the minterms that will evaluate to TRUE. The proper syntax for the input is the value of the minterms separated by a comma ",". Input may be in any order. Further instructions are displayed in the GUI.

2. Press Submit (on the GUI). The program will display a step-by-step solution on simplifying the Boolean expression. The simplified answer will be at the bottom.

3. To try again, press “Try Again” (on the GUI).