Steps for implementation of Iris flower classification using KNN

Steps to implement on DE0 nano using NIOS:-

1. Create a new project in Quartus and add all Verilog files and qsys file present in project zip folder.
2. Next, to implement the design on FPGA and test it, open platform Designer from Tools menu and open **My_processing_system.qsys** file and then click on Generate HDL and Generate Testbench also. (This step can be skipped as qip files are already generated).
3. Now Add **My_processing_system.qip** file to the project from synthesis folder.
4. Now, **nios_ee2020** is kept as toplevel entity.
5. Do **Analysis and synthesis**.
6. Do **Pin Planning** for DE0 nano board.
   CLK:-PIN_R8
   RESET_N:-PIN_J15
7. Now, Compile the whole Design.
8. Open the Eclipse SDK tool via '**Tools > Nios II Software build tools for Eclipse'**
9. Before opening Eclipse, a dialogue box will prompt you to select a workspace. Create a new workspace by clicking 'Browse' and creating a new folder in your Quartus project directory. Click 'Ok' to open Eclipse SDK.
10. On opening Eclipse, Go to '**New > NIOS II Application and BSP from template'**.
11. In the wizard, we need to provide the 'sopc' file generated by the Platform Designer. Provide a suitable name to the project. Further, the 'Hello World Small' template code should be used. Click 'Next'
    Ensure that the option of 'Use default location' is ticked. Click 'Finish' to complete the project creation.
12. Open '**hello_world_small.c'** from the Project Explorer.
13. Now, Copy paste the code of our hello_world_small.c into the current file.
    This code is to be used for sending the test inputs to the design under test and take out the outputs from it. This is done by using IO write (IOWR) and IO read (IORD) commands which require base addresses of the inputs and outputs
14. Go to Programmer from Tools menu in quartus and **connect DE0 nano board** to PC.
15. Now, **build the project** as shown below by right clicking on the project name in project explorer in Eclipse.
16. Upon successful build, proceed to Run the project as '**NIOS II Hardware'**.
    If the dialogue box appears with the error, click on 'Refresh Connections' under the 'Target Connection' tab. The USB Blaster connection should occur. Then, tick both the tick boxes under the 'System ID checks' section. Click on 'Apply' and then 'Run'.
17. Now, **Results will appear on Console**.