Steps for implementation of Iris flower classification using KNN on labsland

1. Upload all the Verilog files setting 'toplevel_labsland.v' module as top level entity.

2. Synthesize and upload to FPGA.

3. Check the output class for the given inputs for clustering size k=1, 3 and 5:

    sepal length - 6.1 cm, sepal width - 2.8 cm, petal length - 4.7 cm, petal width - 1.2 cm

Signal Assignments:

instr=KEY[2:0] (KEYS in labsland are active low)

LEDR[1:0]=result

sw[17:0] →

17	16	15:14	13:7	6:0
reset	sel_display	k	Sepal/Petal length (input_l)	Sepal/Petal width (input_w)

Sequence of inputs:

a) k = 3 (01) \\cluster size

i) SW[17:0] = 1001 1100001 0101000

(decoded as reset=1, sel_display=0, k=01 , input_l=6.1cm, input_w=2.8cm)

ii) SW[17] = 0 and KEY[0] = 0

(decoded as reset=0 and instr=110)

iii) KEY[0] = 1 and SW[17:0] = 0001 1000111 0010010

(decoded as instr=111, reset=0, sel_disp=0, k=01, input_l=4.7cm and input_w= 1.2cm)

iv) KEY[1] = 0

(decoded as instr=101)

v) KEY[1] = 1

(decoded as instr=111)

vi) KEY[2] = 0

(decoded as instr=011)

\\we will get the output for k=3 as LEDR[1:0] = 01 (versicolor)

b) k = 1 (00)

i) SW[15:14] = 00

(decoded as k=00)

\\we will get the output for k=1 as LEDR[1:0] = 01 (versicolor)

c) k = 5 (10)

i) SW[15:14] = 10

(decoded as 10)

\\we will get the output for k=5 as LEDR[1:0] = 01 (versicolor)