1-

int7 a7 =-3;

int10 a10 = a7;

uint7 b7 =125;

uint10 b10 = a7;

2-

ap_uint<10> ua10, ub10;

ap_int<7> a7 = 0x71;

ap_uint<6> ua6 = 0x31;

ua10 = ua6;

ub10 = a7;

3-

uint10 ua10 = 5;

int7 a7 =-8;

uint13 ua13 = ua10+a7;

4-

uint10 ua10 = 5;

int7 a7 =-8;

uint13 ua13 = ua10+(uint7)a7;

5-

```
#include <ap_int.h>

void single_perceptron_nn (
              ap_int<8> x1,
              ap_int<8> x2,
              ap_int<8> x3,

              float w1,
              float w2,
              float w3,

              float b,

              bool &y) {
#pragma HLS INTERFACE ap_ctrl_none port=return

#pragma HLS INTERFACE ap_none port=x1
#pragma HLS INTERFACE ap_none port=x2
#pragma HLS INTERFACE ap_none port=x3

#pragma HLS INTERFACE ap_none port=w1
#pragma HLS INTERFACE ap_none port=w2
#pragma HLS INTERFACE ap_none port=w3

#pragma HLS INTERFACE ap_none port=b

#pragma HLS INTERFACE ap_none port=y

       float s = w1*x1 + w2*x2 + w3*x3 + b;

       if (b >= 0) {
              y = 1;
       } else {
              y = 0;
       }

}
```