

**CMPG-765/CMPT- 465 Neural Networks and Learning Systems**  
**Homework-2**

1. Design a program, which, applies the Hebbian learning rule to the input/output mappings presented in slides 16 and 17 of the Lecture-3 class notes. Use the Hebb function designed in Project 1. Test for each of these two input/output mappings whether the weights obtained by the Hebbian rule implement it or not. (**undergrads - 90/100, graduates – 60/100**)
2. (**Required for graduates and extra credit for undergrads**). Apply the Hebb function to the following real to binary input/output mappings

$x_1$	$x_2$	$x_3$	$f_1(x_1, x_2, x_3)$	$f_2(x_1, x_2, x_3)$
0.5	1	0.5	1	1
0.5	1	-0.3	1	-1
0.4	-0.5	0.4	1	-1
0.4	-0.5	-0.5	-1	-1
-0.3	0.7	0.5	1	1
-0.3	0.7	-0.4	1	-1
-0.7	-1	0.3	-1	1
-0.7	-1	-0.5	-1	-1

Test for each of these two input/output mappings whether the weights obtained by the Hebbian rule implement it or not. (**undergrads – 30 extra credit points, graduates – 30/100**)

3. Write a brief report with your conclusions (**10/100**)
4. Turn in your source code, a screen shot of its test run and your report.