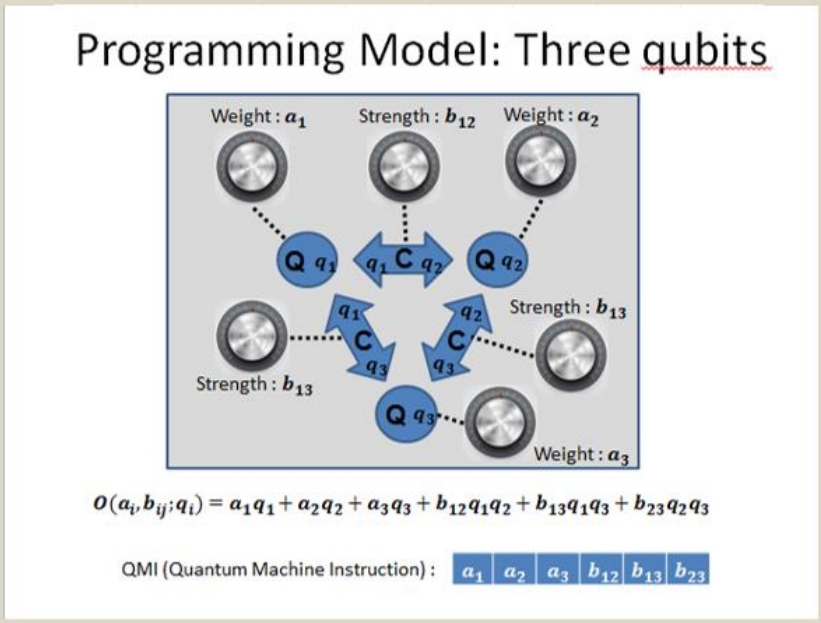
Quantum Computing HW1 Problem 2

2.

3-qubits

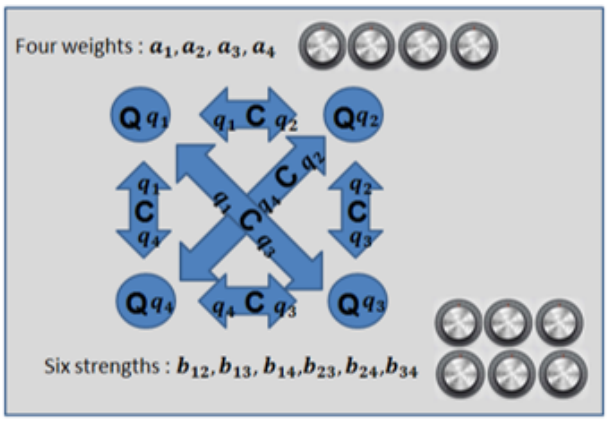


q_1	q_2	q_3	Objective
0	0	0	0
0	0	1	**-1**
0	1	0	**-1**
0	1	1	0
1	0	0	**-1**
1	0	1	0
1	1	0	**-1**
1	1	1	2

a_1	a_2	a_3	b_{12}	b_{13}	b_{23}
-1	**-1**	**-1**	**1**	**2**	**2**

Quantum Computing HW1 Problem 2

4-qubits



$$O(a_i, b_{ij}; q_i) = a_1q_1 + a_2q_2 + a_3q_3 + a_4q_4 + b_{12}q_1q_2 + b_{13}q_1q_3 + b_{14}q_1q_4 + b_{23}q_2q_3 + b_{24}q_2q_4 + b_{34}q_3q_4$$

QMI :

a_1	a_2	a_3	a_4	b_{12}	b_{13}	b_{14}	b_{23}	b_{24}	b_{34}
-1	-1	0.5	0.5	1	2	0	0	2	-2

q_1	q_2	q_3	q_4	Objective
0	0	0	0	0
0	0	0	1	0.5
0	0	1	0	0.5
0	0	1	1	-1
0	1	0	0	-1
0	1	0	1	1.5
0	1	1	0	-0.5
0	1	1	1	0
1	0	0	0	-1
1	0	0	1	-0.5
1	0	1	0	1.5
1	0	1	1	0
1	1	0	0	-1
1	1	0	1	1.5
1	1	1	0	1.5
1	1	1	1	2