

## Lab 6 Bernstein-Vazirani problem

### Exercise 1 - Bernstein-Vazirani problem

1. Explain Bernstein-Vazirani problem
2. Find  $U_f$  gate for the problem  
(hint see: fig 2.8 in <http://www.lassp.cornell.edu/mermin/qcomp/chap2.pdf>)
3. Implement and test  $U_f$  gate in the simulator;
4. Implement the solution of the Bernstein-Vazirani problem using quantum gates  
(hint see: fig 2.9 in <http://www.lassp.cornell.edu/mermin/qcomp/chap2.pdf>)
5. Check the result of the solution. What is the gain in comparison to the classical computer?