Student Information

Name: _____ Student ID: _____
Due Date: 8 Nov 2018, 11:59pm.
Submit answers on eDimension in pdf format. Submission without student information will **NOT** be marked! Any questions regarding the homework can be directed to the TA through email (contact information on eDimension).

Week 6

Each question is worth 30/10 = 3 marks. For Question 4 part 1, a) and b) is worth 1.5 marks each.

Question 1

Answer: b, c, c. The average number of empty slots is $S = m(1 - 1/m)^n$. Since $n = m^2$ we have that $S = m((1 - 1/m)^m)^m$, which for large m tends to $m(1/e)^m$ which tends to 0. Similarly, this tends to infinity for part 2 and 3.

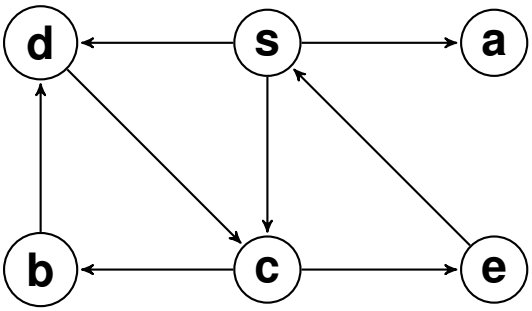
Question 2

Answer: b, c, c. For part 1, use formula $S = m(1 - 1/m)^n$. For part 2, number of collisions $= n - (m - S)$. For part 3 we have that $n/m = 1.5$.

Question 3

Answer: b, c.

Question 4



Answer for part 1:

a) BFS - *s, a, c, d, e, b*

b) DFS - *s, a, c, e, b, d*

Other possible answers are also accepted.

Answer for part 2: a and b are not sensible since the question only asks to compare between the two representations in terms of space. c is true since we store a number of $O(n)$ nodes and edges (i.e., successor nodes), and each node needs *log n* bits to be identified (we need enough bits to distinguish among n nodes).