

SE-441 Continuous Delivery and DevOps
Winter 2018-2019
Homework 1
Due On: January 17, 2019
25 points

Please answer each of the following questions as completely as you can. Be as specific as you can and show your work where applicable; vague answers will not earn you full credit. Please submit your answers as an MS Word, PDF, or text file.

Submit your answers to D2L by January 17, 2019. Late homework will not be accepted.

1. [15 points] Suppose our organization does 24 deployments per year of a particular service. Suppose that 10% of them cause an average of 8 hours of downtime and another 15% of them cause an average of 2 hours of downtime. Each hour of downtime costs us \$25,000.
 - a. How much is the downtime costing the organization annually?
 - b. Suppose management has set a new goal for the year of reducing the cost of our downtime to \$250,000. They like the pace at which new features are delivered so they don't want to reduce the number of deployments, but they want them to be much more reliable. What change failure rates (rounded to the nearest tenth of a percent) do we need to reach in order to achieve this goal? *Hint: Maintain the relative frequencies of the bigger and smaller change failure rates. In other words that the longer failures make up 40% of all failures and the shorter ones the remaining 60%.*
2. [10 points] Your software engineering director estimates that the division is spending an excess of 8% of its time on rework. The division is made up of 250 technical staff making an average of \$80,000 per year with a benefits multiplier of 1.4.
 - a. What is the annual cost of that excess re-work?
 - b. Your director wants to reduce the division's annual cost of rework by \$500,000. His preferred approach is to reduce the percentage of excess rework. What must the excess rework percentage be to meet your director's target?