**SE441 Assignment 2**: Seth Weber

1. [10 points] Consider the following value stream map:

The typical work day is 8 hours per employee and they generally work 5 days per week. They release updates to their software every 2 business weeks.

* 1. What is the total lead time in hours? **624hrs**
  2. What is the total process time in hours? **31hrs**
  3. What is the process cycle efficiency? **4.97%**
  4. What is the rolled %C&A for the value stream? **48.74%**
  5. If the development team typically completes 100 story points per 2-week iteration, what is the average takt time of each story point per hour? **0.29 story points produced per hour**

1. [15 points] Using the provided Excel spreadsheet, perform the same simulation that we did in class.
   1. Run the simulation using the spreadsheet by filling in the values in the ’roll’ row. You can use a 6-sided die or some other random number generator that gives you reasonably random numbers between 1 and 6. Save a copy of the worksheet as a PDF.
   2. Experiment by changing the %C&A values for the various workstations. What is the impact on workstation ’E’ of changing the %C&A values of the earlier workstations?
      * **The earlier the %C&A decreases in the line of workstations coupled with the degree of decrease that happens regulates stronger impact on workstation “E” especially in the ‘moved’ row. In subproblem “h” the %C&A will be shown so have the effect of making the standard deviation stay relatively standard as far the the ‘roll’ row is concerned. The ‘moved’ row is the one most affected. The**
   3. Plug in the %C&A values from problem 1 of this assignment into your simulation and save a copy of the worksheet as a PDF. How do the deviations from the 3.5 mean differ from that of the baseline you established in part a of this question?
      * **I reached my deviations by taking the 3.5 and multiplying it by a factor of (1 + the difference in %C&A) where a %C&A of 90% means 3.5 \* 1.1 = 3.85. I would then run these deviations as previously instructed where a roll of 5 yields a deviation of 1.15 with next roll being a 2 yielding standard devation of (2 - 3.85) + 1.15 = -0.7 thus far. What seems unclear is that in workstation A the ‘roll’ and ‘moved’ category will not differ because workstation A will always send the whole amount of tokens that it rolls. The subsequent workstations are impacted by difference dependencies of WIP and/or deficits in the amount rolled and the amount available to be moved to the next workstation. The functions running on the provided worksheet seem to calculate deviation based on the ‘moved’ row not the ‘roll’ row. For this problem I calculated standard deviations for only the ‘roll’ row which means the deviations are rather uniform across the entire worksheet without any overall trend happening whereas in the previously provided worksheet for part ‘f’ of this problem has standard deviations calculated and plotted based on the functions that are using the ‘moved’ row which show a downward trend towards workstation E.**