

## CS 480 - Software Engineering, Homework 5

1) We are in the process of baking some cookies for thanks giving holiday. Our plan is to cook 40 cookies per batch, 5 batches per hour (200 cookies per hour) and make 1000 cookies in 5 hours. Our budgeted cost per cookie is \$0.05 and the total budget allocated is \$50. After 1 hour of baking, we've made 150 edible cookies; some were burnt, some hit the floor; the kids ate some and fed some to the dog. The actual cost of ingredients after one hour (ACWP) is \$9.00. If we are to perform earned value analysis, **(40 points)**

- a) What is the value of budgeted cost of work scheduled (BCWS)? (2 points)
- b) What is the value of budgeted cost of work performed (BCWP)? (2 points)
- c) What is the value of schedule variance (SV)? Are we on schedule, ahead of schedule or behind the schedule? (8 points)
- d) What is the value of cost variance (CV)? Are we over the budget, within the budget or under the budget? (8 points)
- e) Calculate the schedule performance index (SPI). What percentage are we running at the planned schedule? (10 points)
- f) Calculate the cost performance index (CPI). What percentage are we running over the budget? (10 points)

2) Following table sets out a number of tasks, their duration and their dependencies for ABC Inc. **(40 points)**

- g) Create an activity timeline bar chart (Gantt chart) showing the project schedule. (15 points).
- h) Draw an activity network for the given task schedule. (20 points)
- i) What is the critical path of the activity network? (5 points)

| Task | Effort (person-days) | Duration (days) | Dependencies  |
|------|----------------------|-----------------|---------------|
| T1   | 15                   | 10              |               |
| T2   | 8                    | 15              |               |
| T3   | 20                   | 15              | T1 (M1)       |
| T4   | 5                    | 10              |               |
| T5   | 5                    | 10              | T2, T4 (M3)   |
| T6   | 10                   | 5               | T1, T2 (M4)   |
| T7   | 25                   | 20              | T1 (M1)       |
| T8   | 75                   | 25              | T4 (M2)       |
| T9   | 10                   | 15              | T3, T6 (M5)   |
| T10  | 20                   | 15              | T7, T8 (M6)   |
| T11  | 10                   | 10              | T9 (M7)       |
| T12  | 20                   | 10              | T10, T11 (M8) |

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3) Describe your thoughts about what you think it means to work as a software engineer. You may therefore – if you like – be very personal and describe your own plans and fears for your future career, criticism of your education, skills you need to develop further, and soon. This homework question is intended to encourage you to reflect about yourself and your future career, and will therefore be graded generously! **(20 points)**