

UNIVERSITY OF TORONTO
FACULTY OF APPLIED SCIENCE AND ENGINEERING
FINAL EXAMINATION, December 2014
DURATION: 2 and ½ hrs.

CSC444H1 F – Software Engineering I

No Aids Allowed
Exam Type: A

Department:	Electrical and Computer Engineering
Instructor:	Matt Medland

This test counts for 40% of your final grade

Surname: _____

Given Name(s): _____

Student Number: _____

Question Marks

1	_____	/10
2	_____	/5
3	_____	/20
4	_____	/15
5	_____	/10
6	_____	/15
7	_____	/5
8	_____	/5
9	_____	/5
10	_____	/10
11	_____	/10
12	_____	/10

Total _____ /120 = _____ %

1. Work Factor [10 marks]

Describe what a developer's work factor is, as discussed in the course. Is the work factor used as a measure of productivity? Why or why not.

2. Calendar Time vs. Dedicated Time [5 marks]

Suppose a developer with a work factor of 0.75 estimates that a feature will take two (2) weeks to complete. Suppose further that the developer was thinking in terms of elapsed calendar time when she made that estimate. How many dedicated days (or ECDs) will it take her to complete the feature?

3. $F = N \times T$ [20 marks]

Assume your development tracking system records $h_{j,k}$ – the number of hours spent by the j^{th} developer on the k^{th} feature in a given release. Give the definition of F (in terms of f_k) and N (in terms of w_j , where w is work factor) and then prove that $F = N \times T$. Hint: you will also need to define w_j and f_k . Use the scratch paper at the back if necessary.

4. Release and Version Proliferation [15 marks]

What is release proliferation and why is it a bad thing? Likewise for version proliferation. If you have to support multiple releases or versions what can be done to mitigate it?

5. Planning Ratios [10 marks]

The lectures and the text discuss a development planning method in which only the development phase is planned in detail. The other phases (Specification, Testing, Documentation, etc.) are planned as ratios relative to the coding phase. Explain why this method makes sense.

7. Reproducible Builds [5 marks]

What does it mean to have a fully reproducible build? What can go wrong if builds are not reproducible?

8. Regression Test Automation [5 marks]

Why is automated testing often referred to as “**regression**” testing?

9. Business Planning – Budget [5 marks]

Describe the “**baseline budget**” used when preparing a software development department’s annual business plan.

10. Shipping Threshold [10 marks]

Why is defect arrival rate a good metric to use to determine the shipping threshold for a software product? How is the threshold set?

11. A/B-List Features [10 marks]

Explain how the "A" and "B" feature lists are picked and used in the context of release planning. What are the benefits of dividing features in this manner?

12. Branching & Merging [10 marks]

Explain what branch and merge capabilities in a source code control system are, and how having powerful branch and merge capabilities can make developers more productive.

[scratch paper]

[scratch paper]