COSC 499: Capstone Software Engineering Project

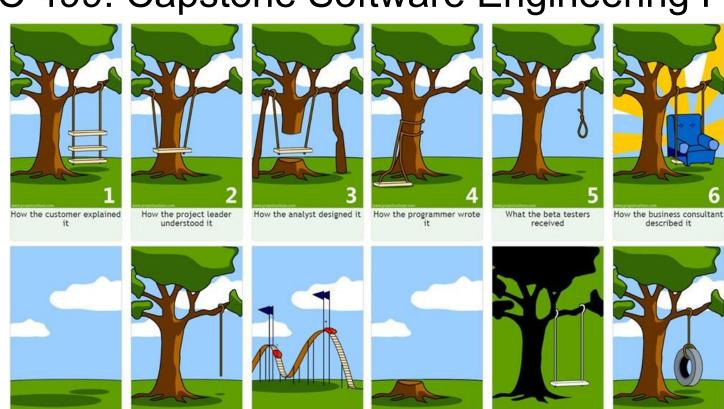


Image taken from www.zentao.pm

How it was supported

How the customer was billed

What operations installed

How the project was

documented

iSwing

What the customer really

needed

What marketing advertised



Position:

- Associate Professor of Teaching, Computer Science, UBCO



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Teaching:

Learning Analytics, Human-Computer Interaction, Intro Programming, Mobile Educational

Game Development, Capstone



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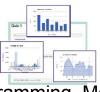
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Research areas:

Team formation/analytics, Novice programming (gamification)







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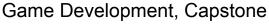
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Past research:



Edutainment design, computational thinking for kids, intelligent user interfaces,

computational linguistics, second language acquisition



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Industry experience as System Analyst and Project Manager



Position:





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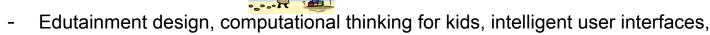


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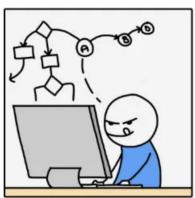
(23) Rules
a. all:
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b. early: $r \rightarrow w / \sigma [_$
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later: $r \rightarrow 1 / \sigma [_$



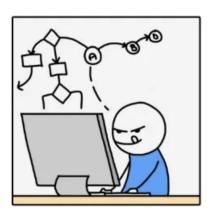
From School to Industry

- A typical degree in COSC
 - Year 1: individual work, toy exercises, code snippets in template project
 - Year 2: logic, data structure, algorithms, inner-workings to "real" programs
 - Years 3+4: special topics in development and research, small projects
 - This curriculum structure hasn't changed in decades!!!
- Which skills do you think are most sought after by industry today?



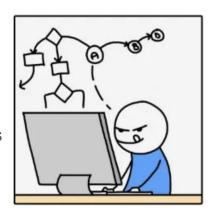
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- Industry expectations (in 2023)
 - Top 5 from Medium: cloud computing, data structures/algorithms, Github, containers, vim/IDEs
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 - project team experience
- How to bridge the gap?





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- Work on project from start to end (of a working prototype), experience different aspects of a software lifecycle development phase
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 Exercise industry-relevant practices and learn industry tools and trends
 - Technology is fast-changing and every sector uses different tools
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 Exercise industry-relevant practices and learn industry tools and trends
 - Technology is fast-changing and every sector uses different tools
 - Pick a direction and learn new things
 - Work effectively in a team, embrace differences, recognize each other's strengths, learn from each other, and produce more than any single individual
 - Learn to work with people who are not you
 - Accept differences in opinions and not take them personally

Lessons Learned from Past Capstones



Past successes:

- Students hired by external client company or receive positive reference letters from clients
- Students learn new technical skills
- Students push through deadlines to meet client needs or to enhance portfolio
- Students' self-discovery, through reflections/conflicts, sometimes through several months

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Things we should avoid/change:

- Some client actions or wishes conflict with our course timeline
- Reports are designed for grading, but have no direct, positive impact on students or the project itself
- Teams are balanced based on skills in order to maximize project success
- Performance is measured based on the quality of the deliverables, but largely ignores the quality of teamwork

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New Approach to Capstone



- Project option
 - Themes are provided, each team comes up with their own solution (within reason)
- Client involvement
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- Team formation
 - Based on your preferences, after team matching activity
- Team coaching, reflection, self-management
 - Weekly updates that tell us about the project progress and team dynamics
 - Teams should reflect on the data reported to us

Course Logistics

- In-person classes Tuesdays and Thursdays:
 - Lectures
 - Team reviews with teaching staff
- Weekly team checkpoints
 - Gives the teaching staff a "temperature" of the team
- Additional deliverables
 - Short reports, mini presentations (to class), video demos, and/or project portfolio descriptions

- Review Canvas course and syllabus
 - See: evaluation criteria
 - See: tentative schedule

Course Re-Design and Team Formation Software

- Go to Canvas course for Capstone, select "Quizzes"
 - Select "Consent to Study"
 - In the description, click on Qualtrics link
 - Consent to give us access to your survey data after course
 - Complete for participation marks (regardless of your consent decision)

