Putting Software Testing Terminology to the Test

M.A.Sc. Seminar

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Drasil

What is Drasil?

My project was originally focused on Drasil, "a framework for generating all of the software artifacts from a stable knowledge base, focusing currently on scientific software" [Hunt et al., 2021]

Drasil's Logo [Carette et al., 2021]

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- I worked on Drasil as an Undergraduate Summer Research Assistant during the summers of 2018 and 2019

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- I worked on Drasil as an Undergraduate Summer Research Assistant during the summers of 2018 and 2019
- "Recipes" specify how information from the knowledge based is used to generate software artifacts, including:
  - SRS (HTML, PDF, Markdown)
  - Code (Python, Java, C#, C++, Swift, Julia)
  - READMEs and Makefiles
  - Drasil's own website[1]!

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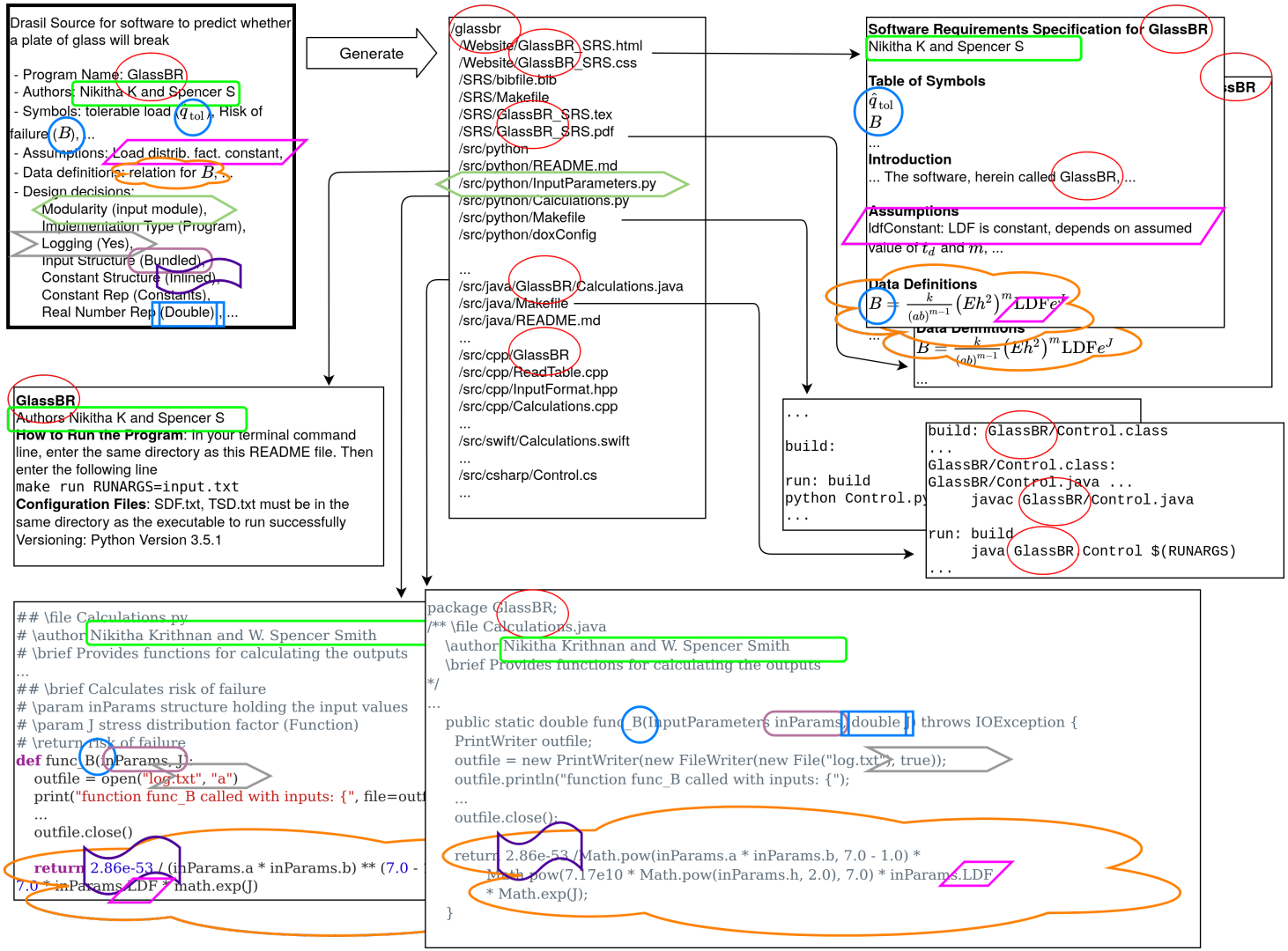
Visualizing Drasil's Traceability



Knowledge flow from knowledge base to artifacts; by Dr. Spencer Smith

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  3. Generate test cases!
- There was a big assumption in this plan that drastically changed my project

Overview of Progression Towards M.A.Sc.

Course-related progression

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  - Two "Software" courses
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  - CAS 781: Advanced Topics in Computing and Software (High-Performance Scientific Computing) - Winter 2023

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- Formed my supervisory committee; we are currently having our first supervisory committee meeting!

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  3. Gives Drasil another "bragging point"!

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3. Testing provides a greater degree of confidence in Drasil's capabilities
4. Generating code for testing allows for it to be done "properly" instead of taking shortcuts commonly taken by humans

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"The information you have should be just as useful for generating tests as it should be for manually running them." — Dr. Jacques Carette

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   - Test cases will then be written for:
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     - Projectile's implementation in other languages
     - Other examples where code is generated: GlassBR, NoPCM, DblPendulum, PD Controller [Hunt et al., 2021]

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   - These test cases will also be added to Drasil's CI/CD to ensure that future changes preserve the code's functionality

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- The past and current Drasil team have created a truly amazing framework!

Thank you!

Questions?

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References


Carette, J., Smith, S., Balaci, J., Wu, T.-Y., Crawford, S., Chen, D., Szymczak, D., MacLachlan, B., Scime, D., and Niazi, M. (2021). Drasil.


Hunt, A., Michalski, P., Chen, D., Balaci, J., and Smith, S. (2021). Drasil - Generate All the Things!