FTERNITY: NUMBERS

SOEN 6481 Software Systems Requirements Specification

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Introduction

- Mode switch between regular arithmetic calculation and scientific calculation regarding PI
- Friendly GUI, customized precision and accuracy, arithmetic capability of PI calculation, circular circumference and circular area calculation and retrieving 10 latest results

System Development Process

Project Promoting

Interview

Analysis

Domain

- The Question and Answer session was provided and the interview results was carefully analyzed
- User Personas, the two interviewees. one professional and one ordinary, were
- The problem domain was

analyzed

2. The concepts relationship and class diagram were made

Use Cases

The sequence diagram were provided for further

Eight use cases

were given and

described

- diagram and activity description
- Eight User stories 1. Basic calculator. were elicited from user's requirements or interview

User

Stories

- A matrix was built to map user stories to 2. Specific scientific their acceptance test cases
- 3. Traceability matrix for each user story and its related information were matrixed

Coding

- domain (regular calculation, calculation mode shift, last 10 results recall)
- number (PI number calculation)
- Practical application of specific scientific Number(circular area calculation, circular circumference calculation)

Quality Contol

- 1. Unit test Suites such as Pl cal and SwingConsole_test were provided
- 2. The Java scratch code as well as test suites were packaged as jar file

Critical Decision

Critical Decision

- calculated by the arcsin(x) expression of Maclaurin series: $\pi = 2 * (1 + 1/3 + 2/(3 * 5) + 3 * 2/3 * 5 * 7 + 4 * 3 * 2/3 * 5 * 7 * 9 + \dots)$
- Found solution to control both calculation **precision** and **accuracy**
- Prioritized user stories by both MoSCoW and text scale
- Matrixed all acceptance tests regarding user stories in one table

Lessons

- Building detailed project schedule
- Adopting a **change management process** at the early stage
- Learning from past project failures
- Running reviews regularly and looking at the successes and improvements needed throughout the process
- Using uniform template

Future Work

Presently, users need to spend time learning how to operate by scripting on console. Improvement on usability and richer functions are expected. Another survey and interview are planned to modify the interaction experience.

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Implementation

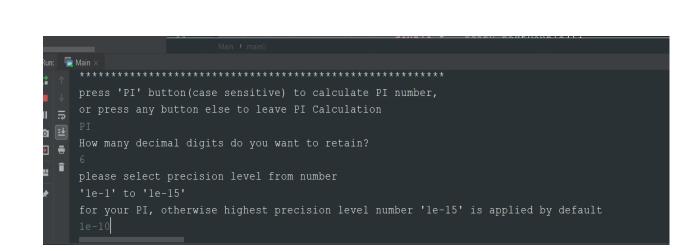


Figure 1. Left, Precision Control; Right, Latest Results Recall

press 'ccf' button to get circumference for your circular, or any button else to leave circumference calculation please input the radius of your circular? circumference of this circular = 18.849555921538393

press 'area' button to get area for your circular, or any button else to leave area calculation please input the radius of your circular? area of this circular = 113.09733552923035

Figure 2. Left, Circumference Calculation; Right, Area Calculation.

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