Project 5 Requirements

Abstract

The objectives, requirements, and relevant information are stated here. Submission of your files is done through the course website.

1 Purpose

The purpose of this project is for you to demonstrate the following:

Capabilities: to produce a basic technical report of professional quality containing:

- Code solutions to Exercises 11.6.1, 11.6.2, and 11.6.3
- Session transcripts showing proof results
- Explanations as required by each problem
- All source code for each exercise in the appendix

Reproducible Proofs and Documentation: All your datatypes, definitions, theorems, and proofs are contained in HOL theories. All your theories are pretty-printed as stand-alone LaTeX reports.

- Your HOL theories must be built using *Holmake*
- Your pretty-printed HOL theories must reside in a subdirectory called HOLReports and be maintained using *make clean* and *make*

Use of Relevant Tools and Techniques: LaTeX, AUCTeX, emacs, ML, and HOL

Deliverables and Evidence: a pdf of your report with *all source files allowing others to reproduce your report.*

2 Project Requirements

Your report shall have content to reflect Exercises 11.6.1, 11.6.2, and 11.6.3

Theorem Names, Theory Names, and Appendices Use the following names:

Theorem Names: In Exercises 11.6.1, 11.6.2, and 11.6.3, use the names as suggested.

Appendix A: Contains the source code file *exTypeScript.sml*.

Appendix B: Contains the source code file *nexpScript.sml*.

3 Relevant Information

3.1 Submission Guidelines

Deadline: check course website

Content & format: zipped file of your Project5 subdirectory containing a pdf of your report and all source files allowing complete reproduction of your report. Your Project5 subdirectory will have the following structure and naming conventions:

- You will have 2 subdirectories in Project5:

  HOL: which contains all your source code, e.g., HOL script files, and

  LaTeX: which contains all the files for your project report, e.g., style files, LaTeX files for your report, figures, etc.

- Definitions and proofs of all exercises will be in script files *exTypeScript.sml* and *nexpScript.sml*
- Your **HOLReports** folder will be *subdirectory of your HOL folder*. Within HOLReports will be the following files:

  Holmakefile: which includes all the paths to theories needed, and specified in a way that does not require third parties to alter path information to compile pretty-printed reports.

  documentation.sml: which contains all commands necessary to pretty print your theory files

  Makefile: which is the script defining *make clean* and *make* commands that remove or build all pretty-printed HOL theory files, respectively.

How submitted: through course website

Other information: you will be allowed an unlimited number of attempts to submit your files up to the deadline. Your grade is based on the last submission.

3.2 Grading Criteria

Project Report					
Deliverable Item	**Problem Statement**	**Relevant Code**	**Definition & Proof Transcripts**	**Code in Appendix**	**Total**
Chapter 1: Executive Summary	4 points for summary	N/A	N/A	N/A	4 points max
Chapter 2: 11.6.1 Proof of LENGTH_APP	1	1	1	1	4 points max
Chapter 3: 11.6.2 Definition of Map and proof of Map_App	1	2	2	1	6 points max
Chapter 4: 11.6.3 Definition of *nexp* datatype, definition of *nexpVal_def*, proofs of *Add_0, Add_SYM, Sub_0*, and *Mult_ASSOC*	1	6	6	1	14 points max
Appendix A: *exType* Theory	N/A	3	N/A	N/A	3 points max
Appendix B: *nexp* Theory	N/A	6	N/A	N/A	6 points max
Report Content Subtotal	7 points max	18 points max	9 points max	3 points max	37 points max
LaTeX folder with all necessary files to reproduce report with no errors					37 points max
				Report Total	74 points max
HOL Script Files and HOLReports Files					
Deliverable Item					**Total**
HOL theories build with *Holmake* error free: 2 points per item					18 points max
Pretty-printed HOL theories in LaTeX compile using *make* error free: 2 points per definition or theorem					18 points max
				HOL Script and HOLReports Files Total	36 points max
				Grand Total	**110 points max**