“Computer Principles for Programmers- BTP105” Final Project

Introduction

BTP105 students will work in teams of 3 to 4 will create a console application demonstrating various null-terminated C strings operations.

Application Modules

Module #1 – Strings Fundamentals (`fundamentals.h, fundamentals.c`)

Module #2 – Strings Manipulations (`manipulating.h, manipulating.c`)

Module #3 – Strings Conversions (`converting.h, converting.c`)

Module #4 – Strings Tokenizing (`tokenizing.h, tokenizing.c`)

Each module is divided into three blocks.

Fundamentals ->	1) Indexing 2) Measuring 3) Copying.
Manipulations ->	1) Concatenation 2) Comparison 3) Search.
Conversions ->	1) Converting to `int` 2) Converting to `double` 3) Converting to `long`
Tokenizing ->	1) Tokenizing Words 2) Tokenizing Phrases 3) Tokenizing Sentences

Each team has three “junior” programmers responsible for modules 1-3 and one “senior” programmer (team leader) responsible for module 4, synchronizing and integrating modules into the main application.

Application Versions and Deadlines

In Version #1 students implement first blocks of code only, in Version #2 – the first and the second blocks, in Version #3 – all three blocks. Each version takes one week to complete.

Project Details

Students will not develop modules from scratch. The code for all modules will be provided by the instructor as `.png` (graphics) files.

Students will have to do the following

- *Enter **code**, **comment**, **compile**, **test**, **stage*** and ***commit*** versions into a `git` repository (Git (git-scm.com)); As you go through this process, each checked in version should provide supporting comment describe what is being checked in and why. Each module should have an associated test report briefly detailing your testing strategy. Feel free to use either a local or remote git repository.

- ***You will communicate*** and ***collaborate*** through Blackboard groups. Junior programmers will send modules source to the designed team leader. The team leader will subsequently submit a **final exported git repository repo (source files, test reports and screenshots)** through Blackboard. Each team member shall also submit **their exported intermediate repository** (the repository used before sending completed files to their team lead).

Rubrics

The instructor may mark the final project with a C/C+ if version #1 was completed, a B/B+ if version #2 was completed, and an A/A+ if students team reached the final version #3. The final project mark will depend on the quality of students' comments, efficiency of their communications monitored by the teacher, ability to meet deadlines and on the application testing approach/results.

Appendix A Standard Library C Functions used by Modules

Fundamentals Module

strlen()	// length
strcpy()	// copy

Manipulating Module

strcat()	// concatenation
strcmp()	// comparison
strstr()	// search

Converting Module

atoi()	// string to int
atof()	// string to double
atol()	// string to long

Tokenizing Module

strtok()	// tokenizing

Appendix B Students' Responsibilities, Versions, Marks, and Tools Used

	Version #1 **Grade: "C/C+"** **Tools: gcc**	**Version #2** **Grade: "B/B+"** **Tools: gcc, git**	**Version #3** **Grade: "A/A+"** **Tools: gcc, git**
Junior Programmer #1 **Fundamentals Module**	Indexing	Add measuring	Add copying
Junior Programmer #2 **Manipulating Module**	Concatenating	Add comparing	Add search
Junior Programmer #3 **Converting Module**	Converting to int	Add converting to double	Add converting to long
Senior Programmer/Team Leader **Tokenizing Module**	Tokenizing words	Add tokenizing phrases	Add tokenizing sentences

Appendix C Deliverables and Deadlines

Version #1 “C/C+” grade (week 1)

1. fundamentals.h
2. fundamentals.c
3. manipulating.h
4. manipulating.c
5. converting.h
6. converting.c
7. tokenizing.h
8. tokenizing.c
9. main.c
10. test_screenshot.txt

Version #2 “B/B+” grade (week 2)

1. fundamentals.c
2. git_status_log1_screenshot.txt
3. manipulating.c
4. git_ status_log2_screenshot.txt
5. converting.c
6. git_ status_log3_screenshot.txt
7. tokenizing.c
8. git_ status_log4_screenshot.txt
9. main.c
10. test_screenshot.txt

Version #3 “A/A+” grade (week 3)

1. fundamentals.c
2. git_ status_log1_screenshot.txt
3. manipulating.c
4. git_ status_log2_screenshot.txt
5. converting.c
6. git_ status_log3_screenshot.txt
7. tokenizing.c
8. git_ status_log4_screenshot.txt
9. main.c
10. test_screenshot.txt