Programming Fundamentals
Business Application Project, Fall 2022

Assalam o Alaikum, I hope that this document finds you in the best of health. I am Afraz and my partner is Aftab, the two teacher's assistants assigned to you over the course of this semester.

From now on, 4 February 2023, your business project proposals have been considered, and deficiencies in business presentation communicated to you. I hope that you have rectified them.

The purpose of this document is to communicate to you, the *standards* expected from you over this project.

Coding Conventions:

Lets start with the basic question, what is a coding convention?

Every coding language has some informal rules of coding in it, associated with it. These 'rules' are called conventions. These do not affect your code however, as your code is independently verified by the compiler. But, these conventions have a huge impact on how your code is 'perceived' by others. For example, sloppy code written just to do the job will be a pain in the * for the one who maintains it.

Lets go over the conventions in c++:

1. **Code Style:** Usually, in c++, the code style applied is in the camelCase syntax. Now what do I mean by camelCase? Notice the words camel*Case* . In the word, I have capitalized what would be the second word of the normal English letter (Case) and appended it to the first word in small syntax word(camel). So in c++, we will write complete words for variables (int dayStoppageHours, string nameOfTheStudent) etc. The function names are written in the same method, however their first letters are also capitalized (void CalculateHours, string StudentValidity).
2. **Global Variables:** It is an awful practice to use global variables in general. But, sometimes, they are necessary for specific purposes, such as storing number of total users in the system, etc. For this purpose capitalize the entire variable name. For example, the global variable for total users will be int TOTAL_USERS, not int totaluser. Similarly, this thing also allows us to identify a global array, that array will be named declared as int myArray[TOTAL_USERS].
3. **Indentations:** c++ is a compiled language. But nonetheless, Indentations are a huge part of code 'cleanliness'. Generally, indentation means spacing from the left side of the margin. It is mainly used for code inside looping statements, control structures, functions etc. as good intended code is easy to maintain and is good looking. It makes the code more readable and easy to understand. Some programming languages like Python made indentation mandatory instead of using brackets, It makes code easy to read and understand. Some rules for indentation are:

- Each nested block should be spaced with a tab.
- All braces should start from a new line and code starts from a tab ahead of the brace on a new line.

```
if(variable < array)
{
	// do something
}

for(int i = 0; i < limit; i++)
{
	// do something
}
```

4. **Comments:** Comments are the most important in letting others know what logic you have applied. Don't use comments here and there. Use them to explain critical logic, purposes of your functions.

```
bool isHarshadNumber(int num){
	/*
		A procedure to determine whether the given number is a Harshad Number, according to
		the requirement setup in Line1.
		INPUT : int
		OUTPUT: boolean True/False
	*/

	int sumDigits = 0;
	int copyDigit = num;	// making a copy of the number passed as parameter.
```

Figure 1 Describing use of comments, and camelCase variable names.

5. **Google:** Let's be honest, it is an era of technology. And I am a strong believer of integrating cutting edge technology with an innovative study model. But how is this possible? Google offers a ton of resources, coding questions. Even youtube is an essential resource for programming videos and lectures. But the boundary comes between distinguishing google for hard work, or just flunking it. Remember the cutting edge technology we discussed earlier? It also includes plagiarism detection tools. But, using google to search for error solutions is a useful resource, and gets out of fixes too. stackoverflow.com is the best website for this purpose.