**BTP 100- Introduction to Programming Using C**

**Assignment #3 (10%)**

**Assignment:** " Data Analysis with Text Files: Exploring Truth and Reconciliation in Canada "

**Learning Outcomes:**

By completing this assignment, you will:

* Develop proficiency in file handling in C.
* Gain practice in string manipulation and data processing.
* Engage with meaningful content about Indigenous communities and the path to reconciliation.

**Assignment Description:**

In this assignment, you will write a C program that reads, processes, and analyzes information from a text file containing data about Canada's Truth and Reconciliation Calls to Action. You will demonstrate your ability to work with file input/output operations, loops, arrays, and string manipulation in C. Additionally, this assignment will encourage reflection on the impact of reconciliation initiatives.

**Dataset:**

A sample text file (“calls\_to\_action.txt”) is provided. Each line in the file represents one of the Truth and Reconciliation Commission's Calls to Action ([Delivering on Truth and Reconciliation Commission Calls to Action](https://www.rcaanc-cirnac.gc.ca/eng/1524494530110/1557511412801)). The file has the following format:

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1|Child Welfare|We call upon the federal, provincial, territorial, and Aboriginal governments to reduce the number of Aboriginal children in care...

2|Education|We call upon the federal government to provide adequate funding for First Nations students...

3|Justice|We call upon all levels of government to fully adopt and implement the United Nations Declaration on the Rights of Indigenous Peoples as the framework for reconciliation...

...

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Each line contains:

* The *Call to Action* number
* The *Category*
* The *Description*

**Tasks:**

1. **Program Features**

Write a C program that:

* Opens the provided “calls\_to\_action.txt” file for reading.
* Reads the data line by line and processes it.
* Allows the user to interact with the data through the following menu:

Menu:

1. Display all Calls to Action

2. Search Calls to Action by category

3. Display total number of Calls to Action

4. Save Calls to Action by category to a new file

5. Exit

1. **Functional Requirements**

* Option 1: Display all Calls to Action neatly formatted.
* Option 2: Prompt the user to enter a category (e.g., "Education") and display all matching Calls to Action.
* Option 3: Count and display the total number of Calls to Action in the file.
* Option 4: Prompt the user for a category, create a new text file (e.g., “education\_calls.txt”), and write all matching Calls to Action to the file.
* Option 5: Exit the program.

1. **Error Handling**

* Handle cases where the file cannot be opened (e.g., file not found).
* Validate user input (e.g., ensure category searches are case-insensitive).

1. **Reflection**

Include a brief paragraph as a separate document where you reflect on how understanding the Truth and Reconciliation Calls to Action enhances your knowledge of Indigenous issues in Canada.

**Submission Requirements**

* Submit your source code and output screenshots.
* Include a brief reflective document
* Ensure your program is well-commented and follows coding best practices.

**Evaluation Criteria**

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| **Criteria** | **Marks** |
| Correct file reading and processing | 20 |
| Menu functionality | 30 |
| Error handling | 10 |
| Code structure and readability | 10 |
| Reflection on the assignment | 10 |
| Overall program correctness and critical thinking (Output) | 20 |