Karunya INSTITUTE OF TECHNOLOGY AND SCIENCES

(Declared as Deemed to be University under Sec.3 of the UGC Act, 1956)

A CHRISTIAN MINORITY RESIDENTIAL INSTITUTION

AICTE Approved & NAAC Accredited

DIVISION OF COMPUTER SCIENCE AND ENGINEERING

SCHOOL OF ENGINEERING AND TECHNOLOGY

A SKILL BASED EVALUATION REPORT

SUBMITTED BY

REDDY TANVIK SRI RAM (URK23CS1261)

COURSE CODE
23CS1005

COURSE NAME

PROGRAMMING FOR PROBLEM SOLVING

NOVEMBER 2023

CISCO CERTIFICATE

INSTITUTE C++ Institute Authorized Academy Program Program Your Future

Statement of Achievement

CLA: Programming Essentials in C

During the Cisco Networking Academy® course, administered by the undersigned instructor, the student has studied the following skills:

- the universal concepts of computer programming,
- developer tools,
- the syntax and semantics of the C language, as well as data types in the C language,
- the means by which to resolve typical implementation problems,
- the writing of C programs using standard language infrastructure, regardless of the hardware or software platform,
- the fundamental programming techniques, customs and vocabulary, including the most common library functions and the usage of the preprocessor.

This Statement of Achievement is to acknowledge that during the course CLA: Programming Essentials in C, the student has been able to accomplish coding tasks related to the basics of programming, and understands the programming techniques, customs and vocabulary used in the C language.

By completing the course, the student is now ready to attempt the qualification CLA – C Programming Language Certified Associate Certification, from the C++ Institute.

TANVIK SRI RAM REDDY
Student

Karunya Institute of Technology and Sciences
Academy Name

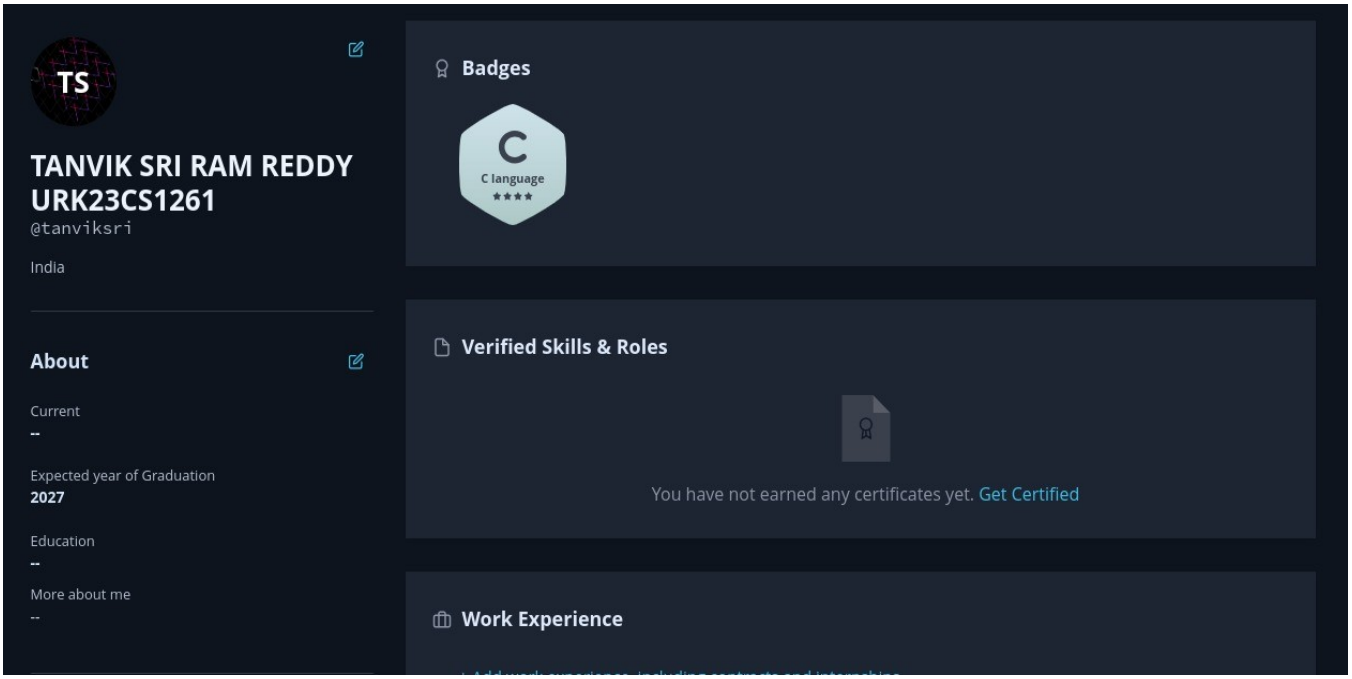
India
Location

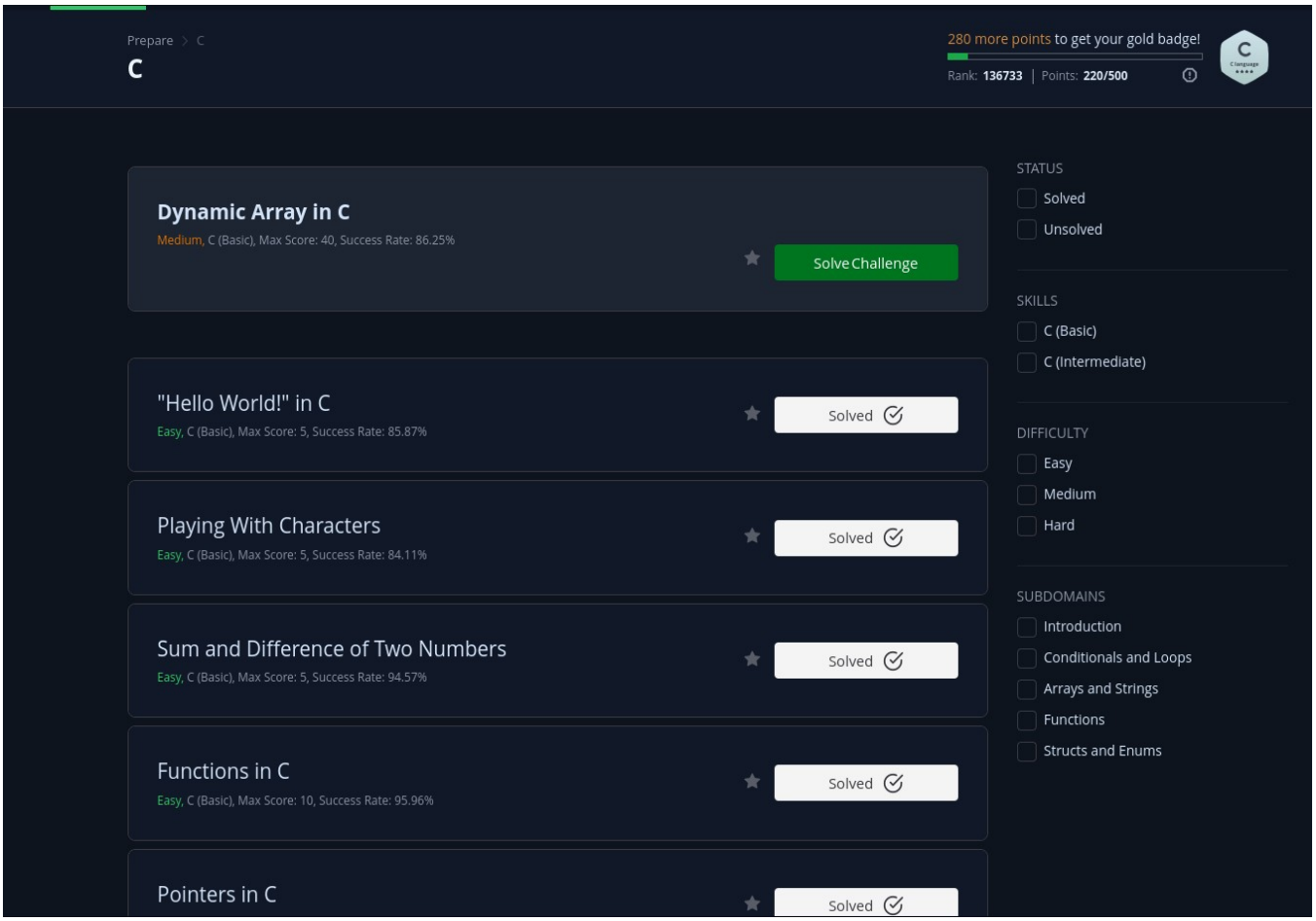
7 Nov 2023
Date

Deva Priya I
Instructor

Instructor Signature

HACKER RANK CHALLENGES





IDEA PRESENTATION TITLE

Personalized Nutritional Analyzer

REPORT

Submitted by

REDDY TANVIK SRI RAM (URK23CS1261)

DIVISION OF COMPUTER SCIENCE AND ENGINEERING

KARUNYA INSTITUTE OF TECHNOLOGY AND SCIENCES
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NOVEMBER 2023.

ABSTRACT

Introduction to the C Program for Nutritional Analysis

Nutritional awareness is crucial for maintaining a healthy lifestyle. To aid in this, I've developed a user-friendly C program that analyzes nutritional data sourced from a file. Its simplicity and intuitive design allow users to delve into the nutritional aspects of various food items, enabling them to evaluate their dietary choices in alignment with healthy eating guidelines.

Understanding the Program's Functionalities

The program is multifaceted, offering several **key functionalities**:

Reading Data: Initially, the program imports nutritional information from a file and stores it systematically using a structure array (struct Item). This streamlined data storage facilitates efficient access and manipulation.

Displaying Available Items: Users are presented with a clear and organized list of available food items parsed from the file. This visual representation enhances user experience, aiding in easy navigation through the array of food choices.

User Interaction and Matching: One of the program's highlights is its interactive capability. It prompts users to input a specific number of food items they wish to assess. These user-provided food items are then compared against the available database from the file for matches.

Calculating Nutritional Values: For matching food items, the program computes a range of nutritional values. It calculates crucial nutritional components such as total calories, protein, fat, saturated fat, fiber, and carbohydrates, providing users with comprehensive insights.

Diet Quality Assessment: Based on predefined healthy thresholds for these nutrients, the program calculates the percentage of a balanced diet achieved by the user-provided food items.

This functionality empowers users by providing a quantitative assessment of their dietary habits.

Memory Management: Post-analysis, the program ensures efficient resource utilization by freeing the allocated memory for the data array.

Scope and Application Benefits

This program serves as an invaluable tool for users seeking to comprehend the nutritional content of specific food items. By evaluating these items, users gain a clearer understanding of the nutritional aspects of their diet. It assists them in making informed decisions about their food choices, steering them toward healthier dietary habits.

Conclusion

In conclusion, our C program for nutritional analysis is an accessible and user-centric solution for individuals keen on understanding and improving their dietary practices. Through its straightforward interface and insightful functionalities, it empowers users to embark on a journey towards healthier habits.

CHAPTER 1
INTRODUCTION

Background Information:

The presentation aims to introduce a program tool called "Personalized Nutritional Analyzer" This program enables users to assess and understand the nutritional content of various food items, aiding in informed dietary decisions.

Problem Statement and Motivation:

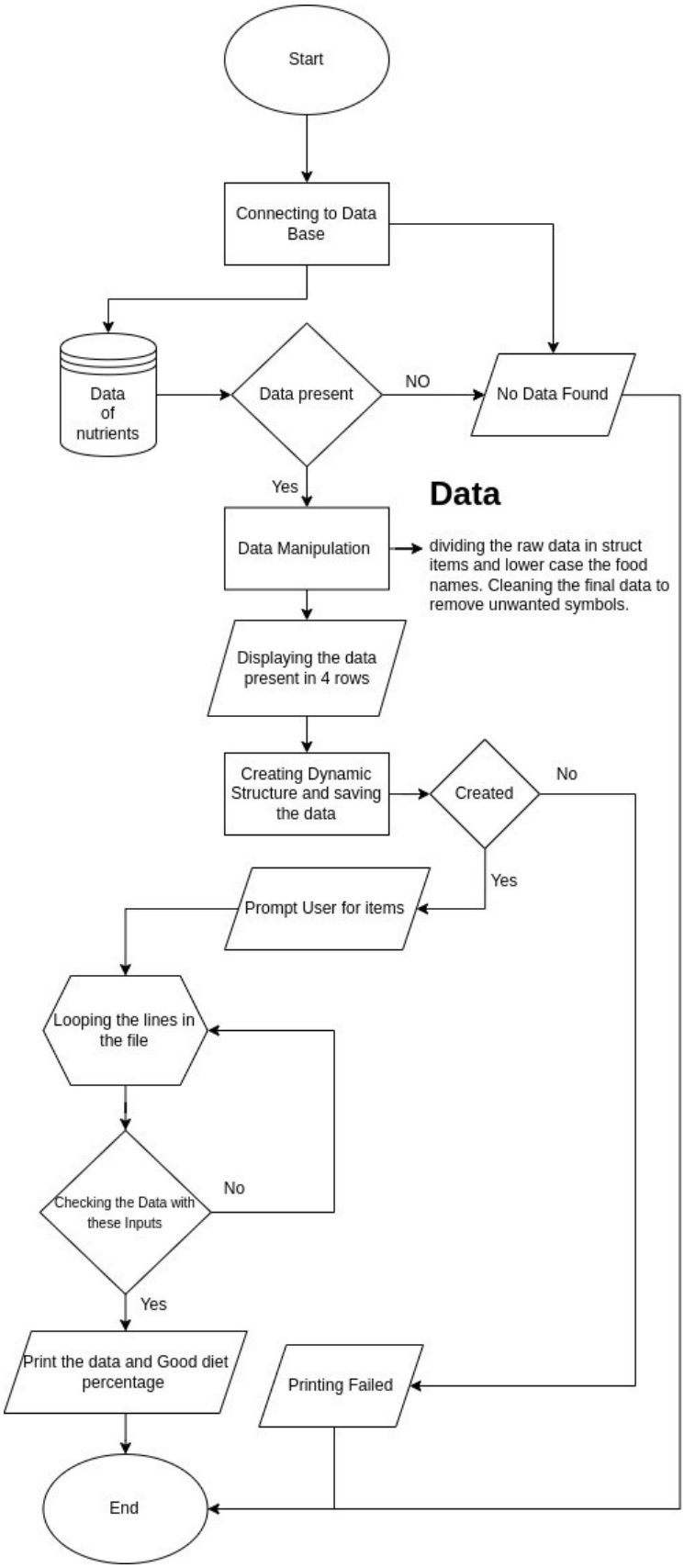
- **Nutritional Awareness Gap:** Many individuals lack comprehensive knowledge about the nutritional content of the food they consume daily.
- **Health Impact:** Poor dietary choices can lead to health issues like obesity, diabetes, and heart conditions.
- **Need for Personalized Insights:** People need a user-friendly tool to assess their diet's nutritional balance and align it with healthy eating guidelines.

Overview of Concepts Used (in C):

- **File Handling:** Reading and parsing data from external files containing nutritional information.
- **Structures:** Utilizing structures (structs) to organize and store food item attributes in a coherent manner.
- **Memory Management:** Efficient allocation and deallocation of memory using dynamic memory allocation.
- **String Manipulation:** Techniques for string cleaning, parsing, and comparison.
- **User Interaction:** Using console I/O to interact with users for input and display purposes.
- **Algorithmic Logic:** Calculating total nutritional values, matching user inputs with stored data, and assessing diet quality based on predefined thresholds.

CHAPTER 2

SYSTEM DESIGN



Struct Definition: Defines a struct Item to encapsulate information about food items, including their name, measurements, and nutritional content (calories, protein, fat, etc.).

File Reading & Data Parsing: Reads data from a file line by line, parsing each line to extract information about food items and their nutritional values. Cleanses the input data, removing unwanted characters and formatting discrepancies.

Display Functionality: Presents available food items from the file in a readable format, organized for easy understanding. Structures the display to showcase multiple items per line, ensuring a user-friendly interface.

User Interaction: Requests user input for specific food items they want to analyze. Converts user input to lowercase for case-insensitive matching with stored data.

Data Processing & Analysis: Matches user-input items against the stored food data, identifying corresponding items and their nutritional details. Calculates the total nutritional content (calories, protein, fat, etc.) for the selected food items.

Diet Quality Assessment: Evaluates the overall diet quality based on predefined nutritional thresholds. Computes the percentage of a balanced diet achieved using the provided food items and compares it against recommended values.

Memory Management: Allocates memory dynamically for storing food item details to prevent memory overflow. Handles memory allocation failures to avoid program crashes.

Error Handling: Manages errors like memory allocation failures, ensuring the program terminates gracefully and informs the user about the issue.

CHAPTER 3

FEASIBILITY ANALYSIS & REAL TIME APPLICATIONS

Feasibility

- **Objective Clarity:** Defining the project's objectives, goals, and intended outcomes to ensure clarity and direction.

- **Resource Evaluation:** Assessing the availability and accessibility of resources like finances, technology, time, and skills necessary for execution.

- **Risk Identification:** Identifying potential obstacles, challenges, and risks that might impede successful implementation and proposing strategies to mitigate them.

- **Market Analysis:** Conducting comprehensive research to understand market demand, competition, user acceptance, and potential growth opportunities.

- **Cost-Benefit Review:** Evaluating the project's anticipated benefits in relation to the incurred costs, focusing on potential returns on investment.

- **Technical Feasibility:** Examining the technological aspects, ensuring scalability, compatibility, and feasibility within existing technical frameworks.

- **Timeline Planning:** Outlining a feasible timeline with achievable milestones to monitor and measure progress.

Evaluation of the Presentation's success in real time applications :

- **Audience Engagement:** Measure audience responsiveness, interaction, and involvement during the presentation. Feedback collection and audience participation indicate engagement levels.

- **Understanding and Retention:** Assess how well the audience comprehends and retains the information conveyed. Evaluate their ability to recall key points or implement learned concepts.

- **Application in Real Scenarios:** Analyze the presentation's practicality by observing its application in real-life situations. Collect data on its usability and relevance in solving actual problems.

- **Impact on Decision-Making:** Evaluate whether the information presented influences decision-making processes. Assess if it assists stakeholders in making informed choices or implementing changes.

- **Feedback and Adaptation:** Gather feedback post-presentation to understand its impact. Utilize this feedback to adapt and refine the presentation for better real-time applicability.

- **Measured Outcomes:** Quantify results or outcomes derived from the application of presented concepts or strategies in real-world settings.

CONCLUSION

Future enhancements and recommendations

Summary:

This C program systematically analyzes nutritional data from a file, enabling users to input specific food items for assessment. It ensures accurate reading of data, effective user interaction, and precise computations of nutritional values. The code manages memory allocation and string manipulation, ensuring seamless data processing. Through a user-friendly interface, it empowers individuals to comprehend the nutritional content of their chosen foods in alignment with recommended standards. The program emphasizes efficient memory handling and user-centric functionalities to provide a comprehensive evaluation of dietary choices. Its structured approach ensures reliable data processing, enhancing the understanding of food-related decisions within established nutritional guidelines.

Limitations:

- **Static Data Size:** It has a predefined maximum item limit, restricting scalability.
- **Simplified Analysis:** The nutritional assessment might oversimplify dietary evaluations, lacking in-depth insights.
- **Limited User Interaction:** Interaction with the program is primarily through the console, lacking a graphical or user-friendly interface.
- **Input Constraints:** Input parsing might be restrictive, not accommodating certain formatting or data input styles.
- **Threshold Constraints:** The hard-coded nutritional thresholds might not be adaptable to diverse dietary guidelines or individual needs.
- **Error Handling:** Limited error detection and handling might lead to unexpected behaviors for invalid inputs or file formats.
- **Memory Management:** It assumes ample memory availability and might not be optimized for devices with restricted memory resources.

REFERENCES

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  https://www.kaggle.com/datasets/niharika41298/nutrition-details-for-most-common-foods/
- **For Flowchart:**
  https://app.diagrams.net
- **For Formula and data on diet:**
  https://pubmed.ncbi.nlm.nih.gov
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School of Computer Science and Technology

Division of Computer Science and Engineering

IA3 Evaluation Details (Odd Semester 2023-2024)

Subject Name: Programming for Problem Solving

Subject Code: 23CS1005

Evaluation Type: Skill Based Evaluation

Name:

Register Number:

IA3: (Following Continuous Assessment Pattern)

1. **Phase 1 (15 Marks) – 5th October 2023 (Afternoon Session)**
   Industrial Certification (CISCO)
   Rubrics:

Sl No	Item	Marks
1	CLA: Programming Essentials in C	
	Total (15)	

2. **Phase 2 (15 Marks) – (3rd November 2023)**
   Hacker Rank – Challenges

Sl No	Item	Max. Mark	Marks
1	C Programming- 1.Hello World 2.Playing with characters 3.Sum and Difference of Two numbers 4.Functions in C 5.Pointers in C	 3 3 3 3 3	
	Total (15)	15	

3. **Phase 3 (10 Marks) – 21st November 2023**
   Idea Presentation - Individual level (Theme: Food, Water, Health, and Energy)

Sl No	Item	Max. Mark	Marks
1	Presentation(5)		
2	Report (3)		
3	Viva (2)		
	Total (10)		

Total : Phase 1 (15 Marks) + Phase 2 (15 Marks) + Phase 3 (10 Marks) = 40 Marks

Faculty In-Charge Signature(with Date)