**Programming Assignment Report**

**1. Title Page**

**Lab Report Title:**  
*e.g., "Lab 3: Sorting Algorithms Implementation"*

**Your Name:**  
*Your full name.*

**Course Name & Number:**  
*e.g., "CS101 - Introduction to Programming"*

**Instructor Name:**  
*Instructor's full name.*

**Date of Submission:**  
*The date you submit the report.*

## ****2. Abstract****

Provide a concise summary of the lab report, including the problem tackled, methods used, key results, and conclusions. This should be 4-5 sentences or around 150-200 words.

## ****3. Introduction****

### 3.1 **Problem Statement**

Briefly describe the problem you are trying to solve in this lab. What is the purpose of the program?

### 3.2 **Objective**

Explain the objective of this programming exercise. What are you trying to accomplish or learn through this lab?

### 3.3 **Background Information**

Provide any necessary background information, such as algorithms or data structures used in the lab. If relevant, mention any theoretical concepts or previous work.

## ****4. Materials and Methods****

### 4.1 **Tools & Technologies**

List all the tools and technologies you used for the project, including programming languages (e.g., Python, Java, C++), integrated development environments (IDEs), libraries, and version control systems (e.g., Git).

### 4.2 **Program Design**

Describe the approach you used in the program. You may include pseudocode, flowcharts, or diagrams to explain your approach.

### 4.3 **Code Implementation**

Provide a brief explanation of how you implemented the solution. You can break the implementation into parts, explaining key functions, classes, and methods. If the code is long, consider adding it as an appendix.

## ****5. Results****

### 5.1 **Test Cases**

Describe the test cases you used to validate your program. Provide examples of input and the expected output.

### 5.2 **Output**

Include a sample of the actual output from running your program. Screenshots or code outputs in a table format are acceptable.

## ****6. Discussion****

### 6.1 **post-lab questions**

Answer questions at the end of the assignment to help you better understand the topics in this assignment.

### 6.2 **Challenges Encountered and Improvements**

Describe any challenges or difficulties you faced during the lab. This could include problems with coding, debugging, or understanding the problem. Explain how you addressed the challenges, including any modifications or improvements you made to the code. You can also mention any additional features or improvements you could make if you had more time.

## ****7. Conclusion****

Summarize the main findings of your lab work. Were the objectives met? What did you learn from the exercise? If applicable, mention any potential extensions or future work related to the project.

## ****8. References****

List any resources (books, articles, documentation, websites, etc.) that you consulted during the lab work.

## ****9. Appendix (if applicable)****

Include any additional materials such as the full code, screenshots, or data used for testing that are too lengthy to include in the main body of the report.