# TRIBHUVAN UNIVERSITY

## INSTITUTE OF ENGINEERING

## SAGARMATHA ENGINEERING COLLEGE

**A**

**PROJECT REPORT**

**ON**

# [STICKMAN LANDING]

# [EX603]

**SUBMITTED TO:**

**DEPARTMENT OF ELECTRONICS AND COMPUTER ENGINEERING**

**SANEPA, LALITPUR**

**SUBMITTED BY:**

**RUJAN MAN TAMRAKAR (SEC077BEI014)**

**SAMIP MISHRA (SEC077BEI016)**

**27th FEBRUARY, 2023**

# ACKNOWLEDGEMENT

We put a lot of time and work into this project. Yet, finishing this project would not have been feasible without the help and guidance of many others. We would like to express our heartfelt gratitude to everyone who assisted us in completing our project, whether directly or indirectly.

We are quite grateful to our teacher, Er. Sushant Bhattarai, for providing us with the opportunity to work on this project.

Our compliments and appreciations also go to our colleague in designing the project. Thank you to everyone who has volunteered their skills to assist us.

# ABSTRACT

The project “Stickman Landing” displays the stickman landing from Airplane using computer graphics/graphics library. Firstly, plane will move from bottom left of the screen to the top right following the road just as it takes off. The height of the elevation increases after certain time. When the plane reaches the top right of the screen the stickman start to moves in vertical direction (y-axis). As the stickman moves closer to the ground the stickman will open the parachute and land on the road at the end.

For the creation of the airplane simply line function is used. To make the stickman, circle and line function is used. And to make the parachute, arc function is used. Plane and Stickman lines are colored with the function called Set Color. Delay function is used to stop the execution for short time. To move, the objects basic looping is used. The plane will move in x and y direction whereas, Stickman and Parachute will move in y-direction only.

The basic idea of this project is object creation and manipulation.

# Contents

# LIST OF FIGURES

# CHAPTER 1. INTRODUCTION

## 1.1 INTRODUCTION

Computer has become a powerful tool for the rapid and economical production of pictures. Computer Graphics remains one the most exciting and rapidly growin -g fields. There is virtually no area in which graphical displays cannot be used to some advantage, and it is no surprising to find the use of computer graphics so widespread.

Computer graphics are graphics created using computers and the representation of image data by a computer specifically with help from specialized graphic hardware and software. Computer Graphics deals with creation, manipulation and storage of different type of images and object. Graphics today is used in many different areas. Graphics provides one of the most natural means of communicating within a computer, since our highly developed 2D and 3D pattern-recognition abilities allow us to perceive and process pictorial data rapidly and effectively. Computer graphics is the most important means of producing pictures since the invention of photography and television. we find Computer Graphics used routinely in such diverse areas such as science, engineering, medicine, business, industry, government, art, entertainment, advertising, education, training, etc.

So for depth understanding and for gaining sound knowledge, we were asked to do this project. We tried to make stickman landing from the plane using computer graphics using graphics code.

## 1.2 OBJECTIVES

The main objectives of this project are:

- To become familiarize with Computer Graphics (graphic library).
- To implement the features of graphics.
- To interface the application of graphics to the real world.

## 1.3 SCOPE AND APPLICATION

Many people for different domain of applications use computer graphics. Images used in the graphics design of printed material are frequently produced on computers, as are the still and moving images seen in comic strips and animations. The realistic images viewed and manipulated in electronic games and computer simulations could not be created or supported without the enhanced capabilities of modern computer graphics. Computer graphics are also essential to scientific visualization, a discipline that uses images and colors to model complex phenomena such as air currents and electric fields, and to computer-aided engineering and design, in which objects are drawn and analyzed in computer programs. Even the windows-based graphical user interface, now a common means of interacting with innumerable computer programs, is a product of computer graphics.

The development of computer graphics has made possible virtual reality, a synthetic reality that exists only inside a computer. Virtual reality is fast becoming an indispensable tool in education. Flight simulators are used to train pilot for extreme conditions. Surgical simulators are used to train novice surgeons without endangering patients. In 21$^{st}$ century without computer graphics we cannot imagine the world. From Entertainment to Space exploration computer graphics has played vital role.

# CHAPTER 2. LITERATURE REVIEW

Computer graphics research looks into new ways to explore, visualize, and experience two-dimensional and three-dimensional worlds. Several basic graphics program has been previously created such drawing basic shapes, setting color of the background/object, drawing charts, etc. Our project emphasizes on 2D object creation.

2D computer graphics is the computer-based generation of digital images—mostly from two-dimensional models (such as 2D geometric models, text, and digital images) and by techniques specific to them. It may refer to the branch of computer science that comprises such techniques or to the models themselves. 2D computer graphics are mainly used in applications that were originally developed upon traditional printing and drawing technologies, such as typography, cartography, technical drawing, advertising, etc.

The aim of this project is to learn 2D object creation and manipulation. This project may help new learners' basic implementation of C standard and graphics functions. However, there can be various approaches to teaching the fundamentals of graphics.

# CHAPTER 3. METHODOLOGY

For the development of "STICKMAN LANDING" we have used C programming language in Code::blocks compiler.

C programming Language

C is a powerful general-purpose programming language. It can be used to develop software like operating systems, databases, compilers, and so on. C programming is an excellent language to learn to program for beginners. It was developed by Dennis Ritchie and remains very widely used and influential.

The C programming language uses libraries as its primary method of extension. In C, a library is a set of functions contained within a single "archive" file. Each library typically has a header file, which contains the prototypes of the functions contained within the library that may be used by a program, and declarations of special data types and macro symbols used with these functions.

| S.N | Header files | Description |
|---|---|---|
| 1. | <stdio.h> | Provides various functions for performing input and output. |
| 2. | <conio.h> | Provides functions for console input and output. |
| 3. | <graphics.h> | Provides access to a simple graphics library that makes it possible to draw lines, rectangles, ovals, arcs, polygons, images, and strings on a graphical window. |

Graphics functions used:

Line, circle, arc, set color

Code::blocks

Code::Blocks is a free, open-source cross-platform IDE that supports multiple compilers including GCC, Clang and Visual C++. It is developed in C++ using wxWidgets as the GUI toolkit. Using a plugin architecture, its capabilities and features are defined by the provided plugins. Currently, Code::Blocks is oriented towards C, C++, and Fortran.

# CHAPTER 4. RESULT AND ANALYSIS

The following output was obtained after the program was run.

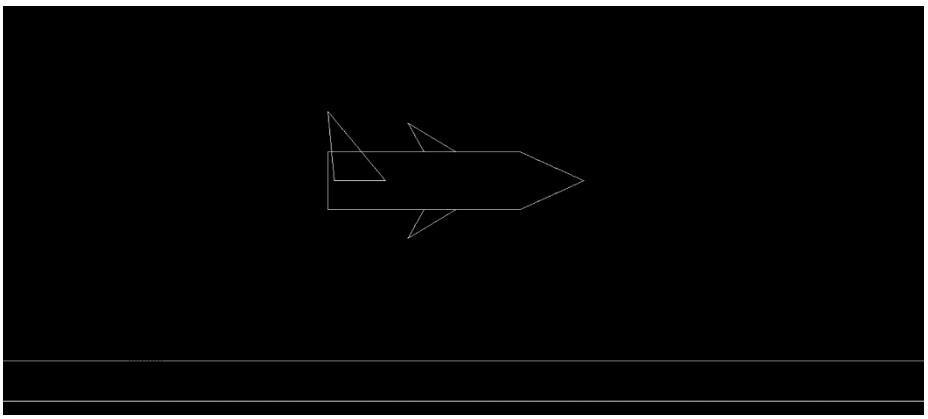

*Figure 4: Plane*

*Figure 7: Parachute*

*Figure 1: Stickman Landing*

# CHAPTER 5. DISCUSSION AND CONCLUSION

In this project, we have become familiar with very basic functions in graphics library. The graphics library helped us draw various shapes and display it on the window. We have used simple loops and logics for object creation on the screen. We moved the object on screen using a combination of line, circle, arc, and a few loops. We had to utilize the hit-and-trial approach to discover the correct coordinates on screen at first, so it was a bit of a frantic procedure. But in the end we got the desired result. We learned how to use loops to manipulate objects on the screen.

Hence, this project came to fruition at the end.

# References

Baker, D. H. (2019). *Computer Graphics C Version ,Second Edition.* Pearson Education,Inc. and Dorling Kindersley Publishing Inc.

Shirley, S. M. (2015). *Fundamentals of Computer Graphics, Fourth Edition.* CRC Press.