

VISVESVARAYA TECHNOLOGICAL UNIVERSITY
BELAGAVI, KARNATAKA-590 018.



**A MINI PROJECT REPORT
ON**

Air Traffic Controller

*Submitted in partial fulfilment of the requirements for the **Mini Project (18CSL67)** course
of the 6th semester.*

**BACHELOR OF ENGINEERING
IN
COMPUTER SCIENCE AND ENGINEERING**

By

**SOMASHEKAR N [1JS20CS415]
SHANKAR KHANPUR [1JS20CS413]**

Under the guidance of

Mrs. Impana K P
Asst.Professor, Dept. of CSE

Mrs. Pavithra G S
Asst.Professor, Dept. of CSE



**Department of Computer Science and Engineering
JSS ACADEMY OF TECHNICAL EDUCATION, BENGALURU
2021 – 2022**

JSS MAHAVIDYAPEETHA, MYSURU

JSS Academy of Technical Education

JSS Campus, Uttarahalli Kengeri Main Road, Bengaluru – 560060

Department of Computer Science and Engineering



CERTIFICATE

This is to certify that the mini project work entitled “**Air Traffic Controller**” is a benefited work carried out by **SOMASHEKAR N & SHANKAR KHANPUR** bearing USN **1JS20CS415 & 1JS20CS413** bonafide student of **JSS Academy of Technical Education** in the partial fulfillment for the award of the **Bachelor of Engineering in Computer Science & Engineering** of the **Visvesvaraya Technological University**, Belgaum, during the year 2022. It is certified that all corrections / suggestions indicated for Internal Assessment have been incorporated in the report deposited in the departmental library. The mini project report has been approved as it satisfies the academic requirements in respect of mini Project work prescribed for the said degree.

Mrs. Impana K P
Asst.Professor, Dept. of CSE

Mrs. Pavithra G S
Asst. Professor, Dept. of CSE

Dr. Naveen N C
Professor, HOD of CSE

Name of the Examiners

Signature with date 1.

1. _____

2. _____

ACKNOWLEDGEMENT

I, take this opportunity to thank one and all involved in helping me build this project. Firstly, I would like to thank the college for providing me an opportunity to work on this project.

I thank the management of the **JSS Academy of Technical Education** for providing all the resources required for the project.

I wish to acknowledge my sincere gratitude to our **Principal, Dr.Bhimasen Soragaon** for his constant encouragement and for providing us with all the facilities required for the accomplishment of this project.

The project would not have been possible if not for the constant support of our Professor and Head of Computer Science Department, **Dr N C Naveen**.

I also, am highly grateful to the guidance offered by **Mrs. Impana K P and Mrs.Pavithra G S, Asst. Professors of Computer Science Department**, who have been very generous in assisting and supporting, to do this project named “**Air Traffic Control**”, which formally started as just a rough idea and now has resulted in the form of this project.

I also would like to thank all the other teaching and non-teaching staff members who had extended their hand for support and co-operation while bringing up this project.

SOMASHEKAR N [1JS20CS415]

SHANKAR KHANPUR [1JS20CS413]

ABSTRACT

Main aim of this Mini Project is to illustrate the concepts and usage of Air Traffic Control in OpenGL.

Air traffic control (ATC) is a service provided by ground-based controllers who direct aircraft on the ground and through controlled airspace.

The primary purpose of **ATC** systems worldwide is to prevent collisions, organize and expedite the flow of traffic, and provide information and other support for pilots

To prevent collisions, ATC enforces traffic separation rules, which ensure each aircraft maintains a minimum amount of empty space around it at all times.

We have used input devices like mouse and key board to interact with program.

We have used input devices like mouse and key board to interact with program.

We have added menu which makes the program more interactive.

CONTENTS

Sl No.	Chapter Name	PageNo.
	ACKNOWLEDGMENT	I
	ABSTRACT	II
	LIST OF FIGURES	V
	LIST OF TABLES	VI
1.	INTRODUCTION	1
1.1	About OpenGL	2
1.2.1	OpenGL commands and primitives	4
1.2.2	OpenGL rendering pipeline	6
1.2.3	OpenGL -GLUT and OpenGL Utility Libraries	9
2.	REQUIRMENTS ANALYSIS	11
2.1	Requirements of the project	11
2.2	Resource requirements	11
2.2.1	Software requirements	11
2.2.2	Hardware requirements	12
3.	DESIGN PHASE	14
3.1	Algorithm	14
3.2	Flow Diagram	15
4.	IMPLEMENTATION	17
4.1	Implementation of OpenGL built in functions	17
4.2	Implementation of user defined functions	19

4.3	Source code	20
5.	TESTING AND SNAPSHOTS	30
5.1	Testing	30
5.2	Test Cases	30
5.3	Snapshots	31
6.	FUTURE ENHANCEMENT	34
7.	CONCLUSION	35
8.	REFERENCES	36

LIST OF FIGURES

Sl No.	Figure Name	Page No
1.	Order of Operations	06
2.	Flow Diagram	16
3.	Snapshot- Airport view	31
4.	Snapshot- Take off	32
5.	Snapshot- Add plane	32
6.	Snapshot- Removing plane	33
7.	Snapshot – Landing plane	33

LIST OF TABLES

Sl No.	Table Name	Page No.
1.	Data types accepted by OpenGL	05
2.	Hardware requirements for visual studio C++ 2010 Express	13
3.	Test Cases	30

