COMPUTER GRAPHICS

CPT205

ASSESSMENT 1

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BSC INFORMATION AND COMPUTING SCIENCE

1 Introduction

As this card is created for invitation of the 2024 XJTLU Graduation Ceremony, all the features are connected with XJTLU and also Suzhou. This report will be divided into two parts. Firstly, I will briefly introduce the design and listing all the features with illustrating some related graphic techniques. After that, a brief instruction about running my program will be provided. In explaining the above, some necessary screenshots will be posted in the report.

To begin with, the overall background color from bottom to top is composed of blue to purple gradient, as they are the classic elements of XJTLU. I create two quads as well as using three kinds of RGB parameters to realize the gradient from blue to purple. In the subsequent stage, texts on the top of the screen is the gist of the card which are demonstrated by different fonts and size.

Figure 1: Background

After that, the main characters of the card are Central Building and International Research Center which are the iconic buildings of north campus and south campus respectively. They are constructed by plenty of lines. Furthermore, there exists a motto engraved on the Central Building hope every XJTLUer will remember it in the future life. Additionally, a sky wheel, always turning, is located in the middle of above two buildings. It's a landmark and romantic places of Suzhou and I utilise transformations and rotation operations to keep it turning.

Figure 2: Iconic Buildings

Last but not least, on the sky of the background, a full moon and stars are already hanging the sky. The stars can be controlled by changing their heights to the appointed position in time. Moreover, we can view the moon is rising by controlling the view port. Besides, a moving plane is passing over the school. That means seniors who are going to study abroad and wish them can pursue their dreams and still memorize the school. And this plane animation also can be controlled with keyboard by changing their parameters timely.

Figure 3: Complete Graph

2 Demonstration

After the general introduction, here is a brief instruction of how to run my program effectively. There are four features that can intricate with keyboard and mouse, the air plane, the sky wheel, the stars and the moon.

Keyboard	Illustrations
'q' or 'Q'	quit the program
's' or 'S'	stop the air plane
'r' or 'R'	resume movement of the plane
'c' or 'C'	change direction of the sky wheel
'a' or 'A'	set a assigned movement of the sky wheel
'l' or 'L'	raise the moon
'd' or 'D'	stop the sky wheel
' '	active stars

Table 1: Instruction of interaction of keyboard

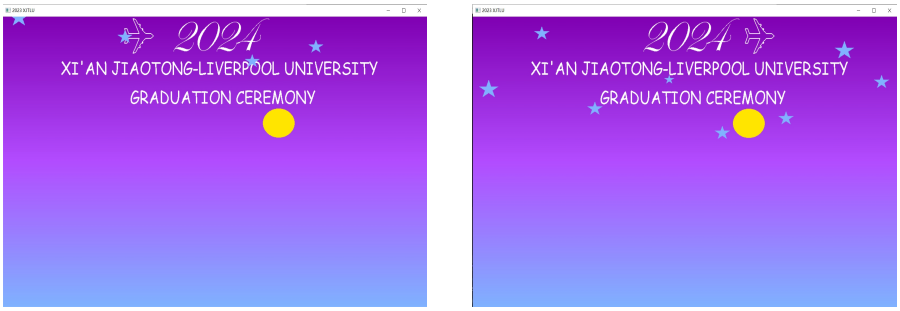
Mouse	Illustrations
'LEFT BUTTON'	decrease the speed of sky wheel
'RIGHT BUTTON'	increase the speed of sky wheel

Table 2: Instruction of interaction of mouse

First of all, air plane can be controlled by keyboard, using 's' and 'r' to let it stop and reset it's step to continue moving respectively.

Secondly, the sky wheel can be controlled by both keyboard and mouse, using 'a', 'd' and 'c' to change direction of turning, stop the moving and recover the turning step. For mouse, left button is applied to decrease the speed and right button is used to accelerate but the speed has a limitation.

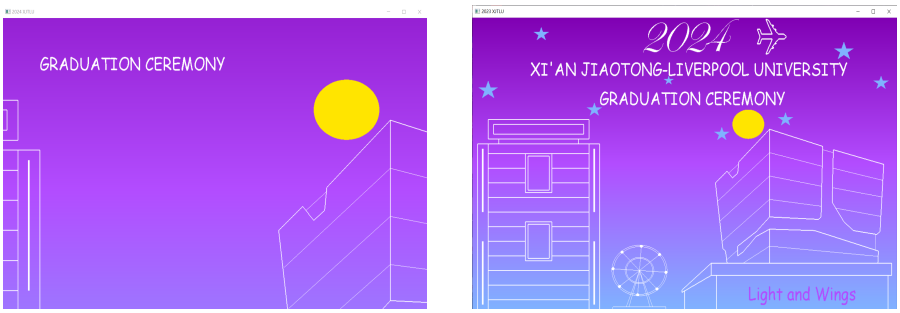
For stars, they can interact with the space key. After pressing the space key, stars will slowly descend from the top of the frame at a constant speed until it arrives at specified position.



(a) **Before** (b) **After**

Figure 4: Stars falling

At last, after pressing 'l', it will raise the moon from bottom to top with the change of view port and eventually recover, which can bring a good experience of the rising of the moon.



(a) **Before** (b) **After**

Figure 5: Moon Rising