Custom Program

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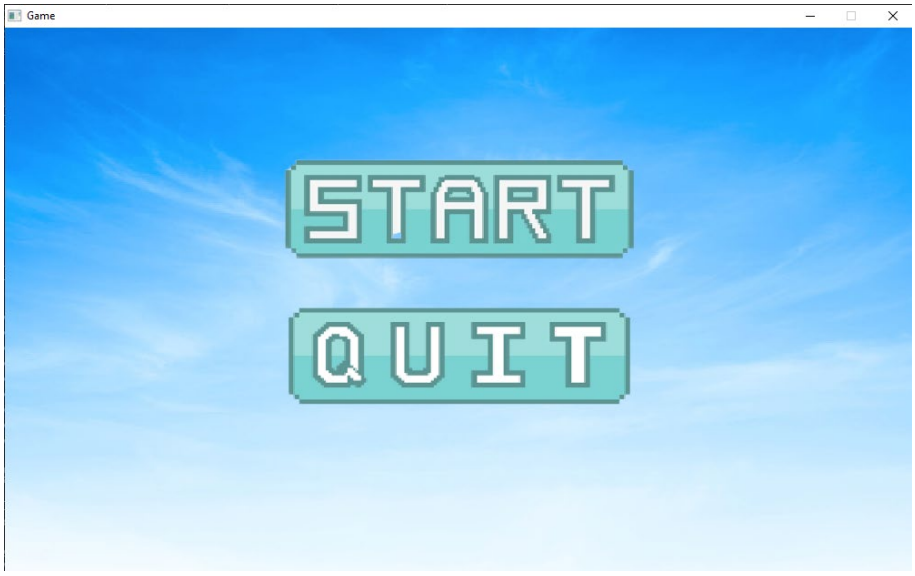
1. Brief explanation of the program.

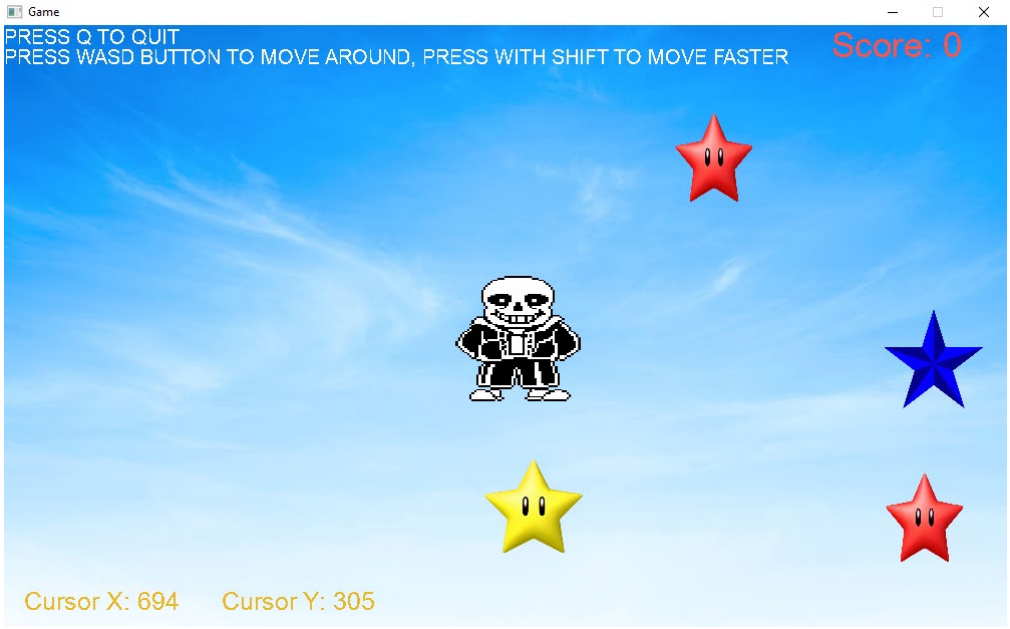
- This program is a simple 2D game developed using SDL2 in C, where a character moves around the screen collecting stars to earn points. The simple program is built using various SDL2 components, including rendering, fonts, image loading, and audio, to create an engaging experience. The main character is controlled using keyboard inputs, with the ability to move in different directions and increase the speed using the Shift key. Stars appear randomly on the screen every five seconds, and when the character collides with a star, it disappears, and the score increases, accompanied by a sound effect. The game starts with a menu screen featuring a “Start” and “Quit” button, which allowed the user to enter the game or exit. The game uses a simple distance-based collision detection system to check if the character is close enough to collect a star. Throughout the game loop, the rendering functions ensure everything is continuously updated, from the background and character movements to the stars and score tracking. Additionally, the game maintains a limit on the number of stars displayed at once, which is maximum four.

2. Interfaces that will be shown when the program is run.

Program Start Interface:



Program Game Interface:



3. List and describe some of the main data types:

Field Name	Data Type	Description	Example of value
character.x	int	Starting point in terms of x-axis of the character.	character.x = 350
character.y	int	Starting point in terms of y-axis of the character.	character.y = 250
rect.w	int	Width of the character.	rect.w = 125
rect.h	int	Height of the character.	rect.h = 125
starRect.x	int	Starting point in terms of x-axis of the star.	starRect.x = star_array[i].x
starRect.y	int	Starting point in terms of y-axis of the star.	starRect.y = star_array[i].y
starRect.w	int	Width of the star.	starRect.w = 100
starRect.h	int	Height of the star.	starRect.h = 100
character	struct	A place to group all the data together which is relevant to the character.	int x int y SDL_Texture*texture_character
star	struct	A place to group all the data together which is relevant to the star.	bool appear int x int y int star_index SDL_Texture *texture_star
getstar	enum	A place to hold constant values that will determine the user score.	GET NOTHING

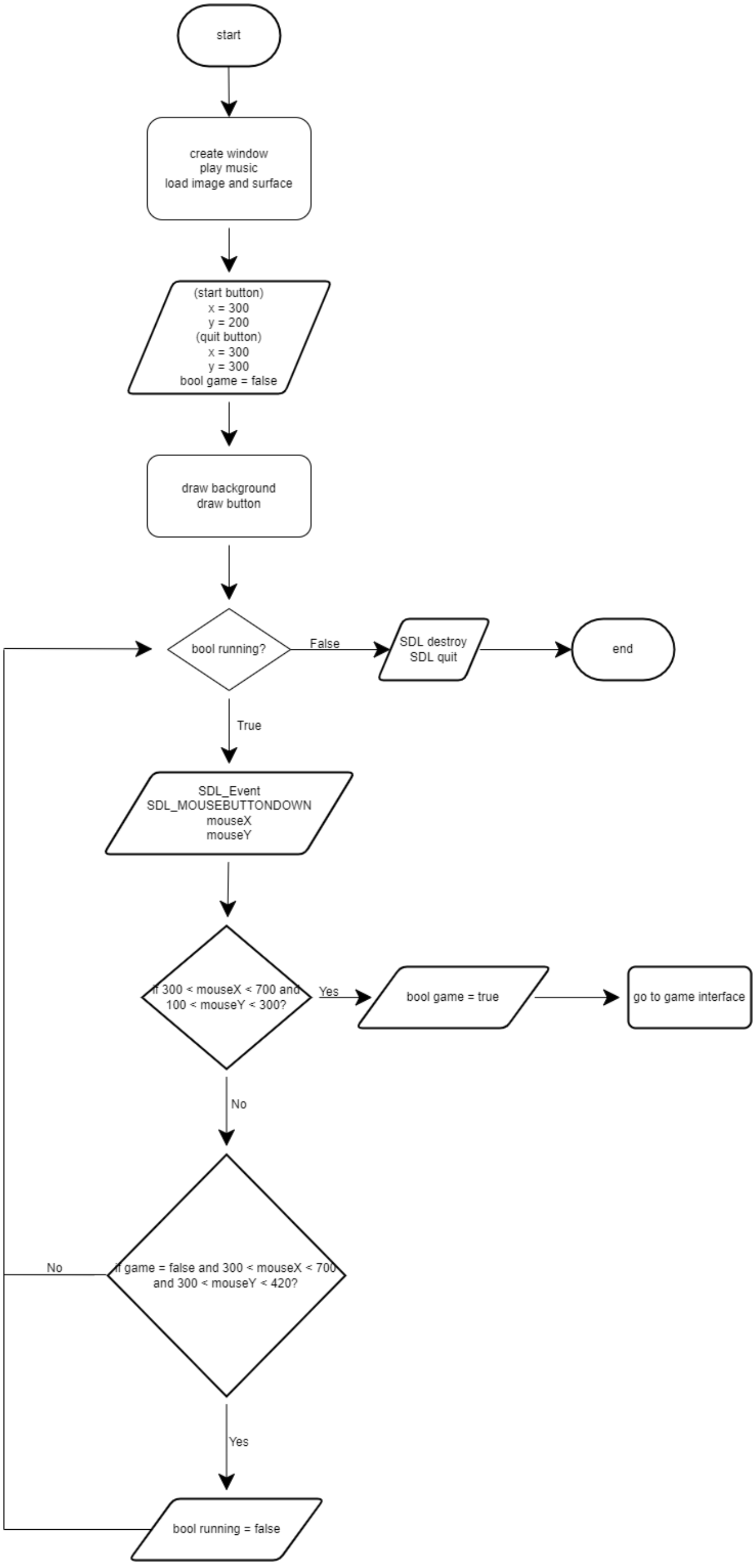
score	int	Total amount of score gotten by the user.	Score: 10
hoverX	int	The value of coordinate X of the mouse cursor.	Cursor X: 570
hoverY	int	The value of coordinate Y of the mouse cursor.	Cursor Y: 316
star_renewal	int	The number of the star index which determines which type of star will appear in the program.	star_renewal = 0
mouseX	int	The value of coordinate X of the mouse clicked location.	mouseX: 350
mouseY	int	The value of coordinate Y of the mouse clicked location.	mouseY: 350

4. Describe the main functions and procedures.

Function /Procedure/Method	Description
draw_character()	Draw the character out inside the program.
draw_button()	Draw the button out inside the program.
draw_text()	Draw the text out inside the program.
draw_star()	Draw the stars out inside the program.
character_get_star()	Create the logic of how the user going to get the star and earn the score.
add_star()	Add a new star after every 5 seconds has pass in the program.
draw_background()	Draw the background of the program.
main()	The most important function that will allow the program to run what it supposed to do such as create window, loading image and playing music.

5. Flowchart

i) Program Start Interface:



ii) Program Game Interface: