Car Racing Game Document

In this Document, I explain each function and methods in details with proper figure.

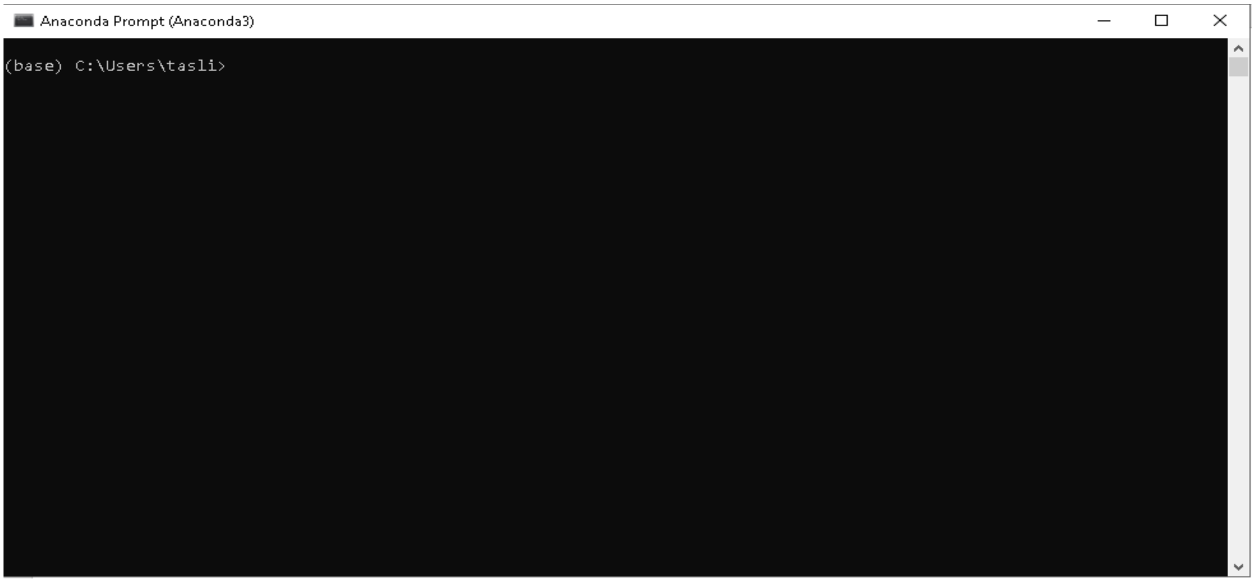
Each step, added new block of code which highlighted by the red color.

For this game requirement tools given below:

1. Any Python compiler like Anaconda (I used anaconda jupyter environment for this game)

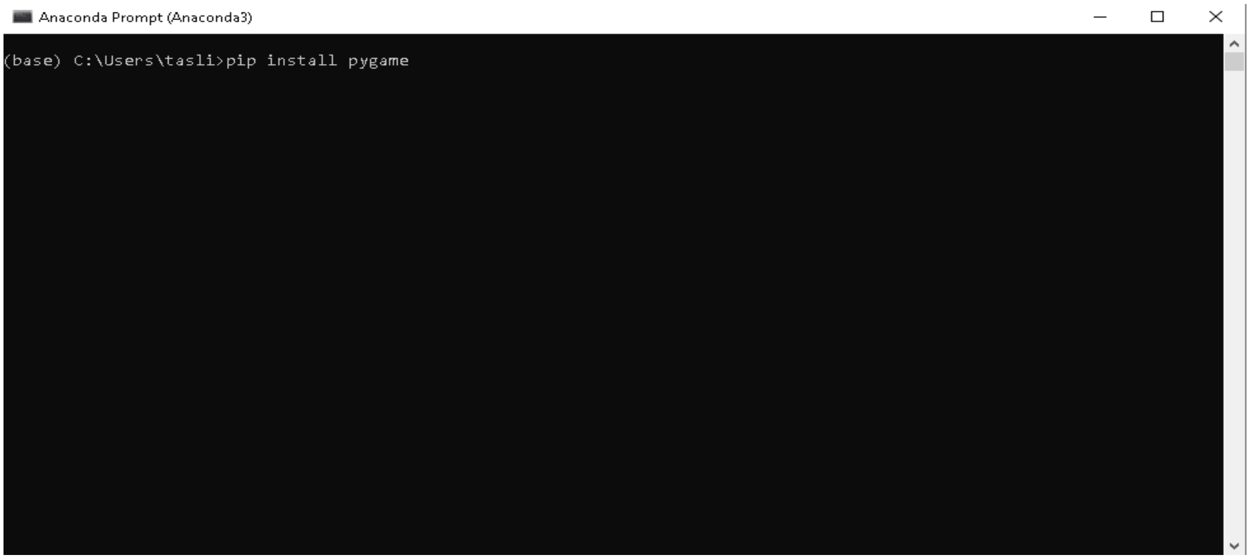
2. Then installed Pygame module, time module, random module, sys module.

2. For that, Open the python or anaconda command prompt from task menu like this,



```
(base) C:\Users\tasli>
```

Then write pip install pygame and press enter button like this,



```
(base) C:\Users\tasli>pip install pygame
```

The same process, we write pip install random, pip install time and pip install sys module your environment (But if you used Anaconda above the module pre-installed in your environment).

So, environment is set up to write source code,

Step-1: import all the module like,

```
import sys
import time
import random
import pygame
```

then initialize the pygame object write

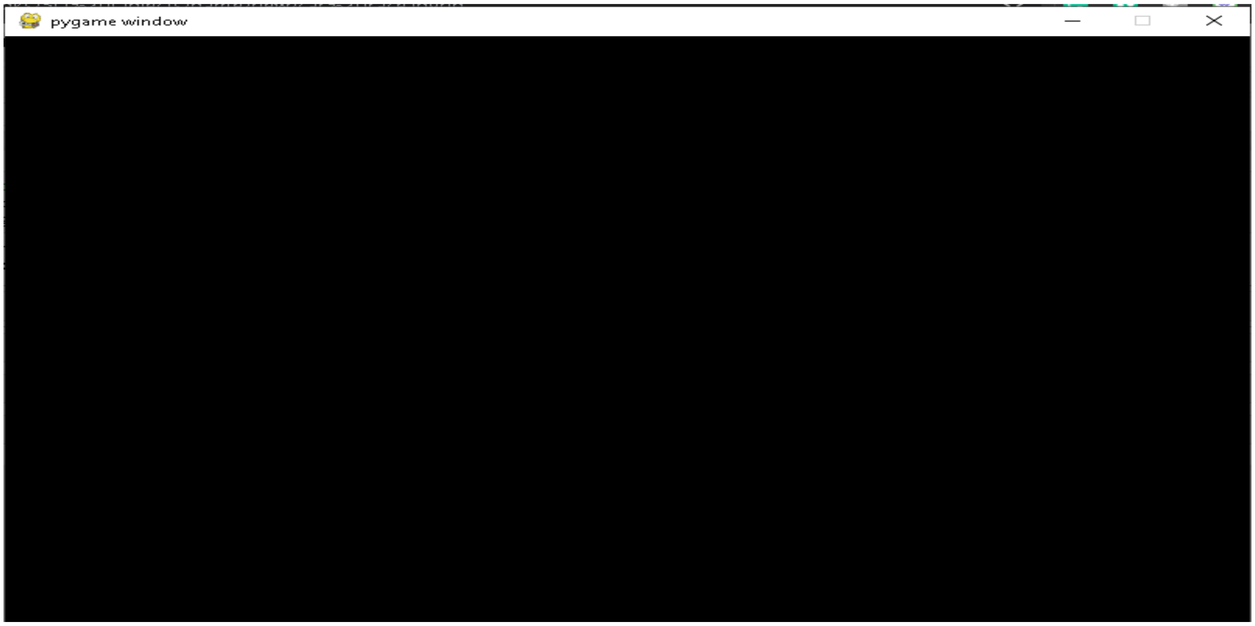
```
pygame.init()
```

Step-2: Draw the display

```
import pygame
pygame.init()
display_width=800
display_height=600
gamedisplays=pygame.display.set_mode((display_width, display_height))
```

Here, 'pygame.display.set_mode()' method used for draw the display. This method gets two inputs as parameter. The two parameter is display width and height.

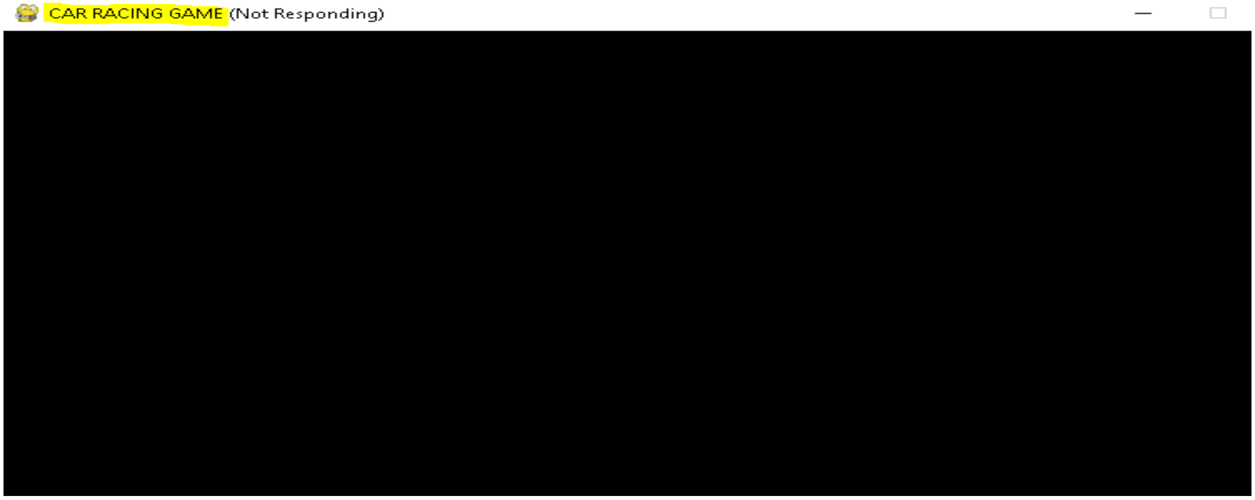
Then run the above code, see the below window,



Step-3: write the caption. For that execute the below lines,

```
import pygame
pygame.init()
display_width=800
display_height=600
gamedisplays=pygame.display.set_mode((display_width, display_height))
pygame.display.set_caption("CAR RACING GAME"). # this line for this step
```

This ‘pygame.display.set_caption()’ method get a string as a input. Then, see the below window

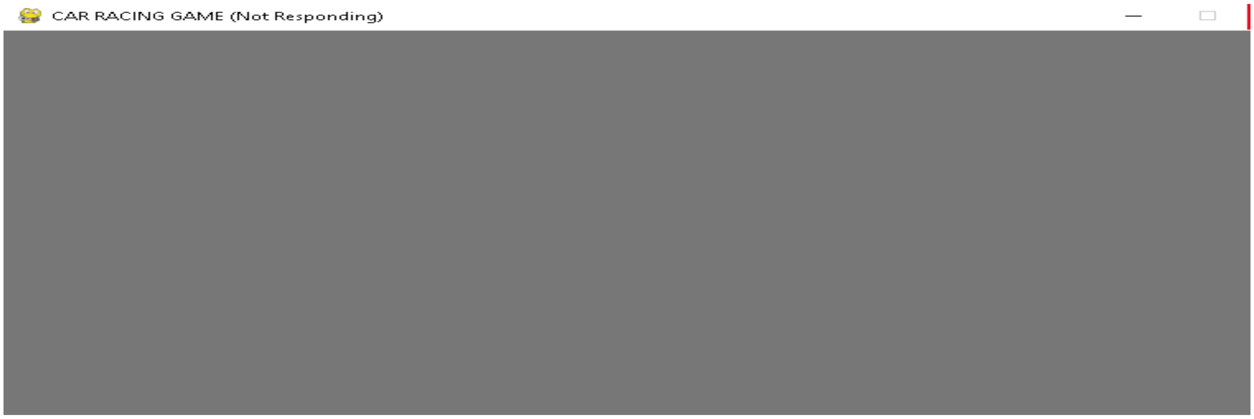


Step-4: Set the backgrounder color.

```
import pygame
pygame.init()
display_width=800
display_height=600
gamedisplays=pygame.display.set_mode((display_width, display_height))
pygame.display.set_caption("CAR RACING GAME"). # this line for this step
gamedisplays.fill((119,119,119))
```

This ‘gamedisplays.fill’ method used for the set the background color. This method gets three RGB value as inputs. Here used gray color. For gray color RGB value is (119,119,119).

```
pygame.display.update() # for update the display
```



Step-5: Event handling (for close button).

```
import pygame
pygame.init()
gamedisplays=pygame.display.set_mode((800,600))
pygame.display.set_caption("CAR RACING GAME")
gamedisplays.fill((119,119,119)) # for gray color
pygame.display.update() # for  update the display
# this section only for this step.
running = True
while running:
    for event in pygame.event.get():
        if event.type == pygame.QUIT:
            running = False
```

Here, used two method pygame.event.get() and pygame.QUIT. First method used for get the event from display and second method used for close the window.

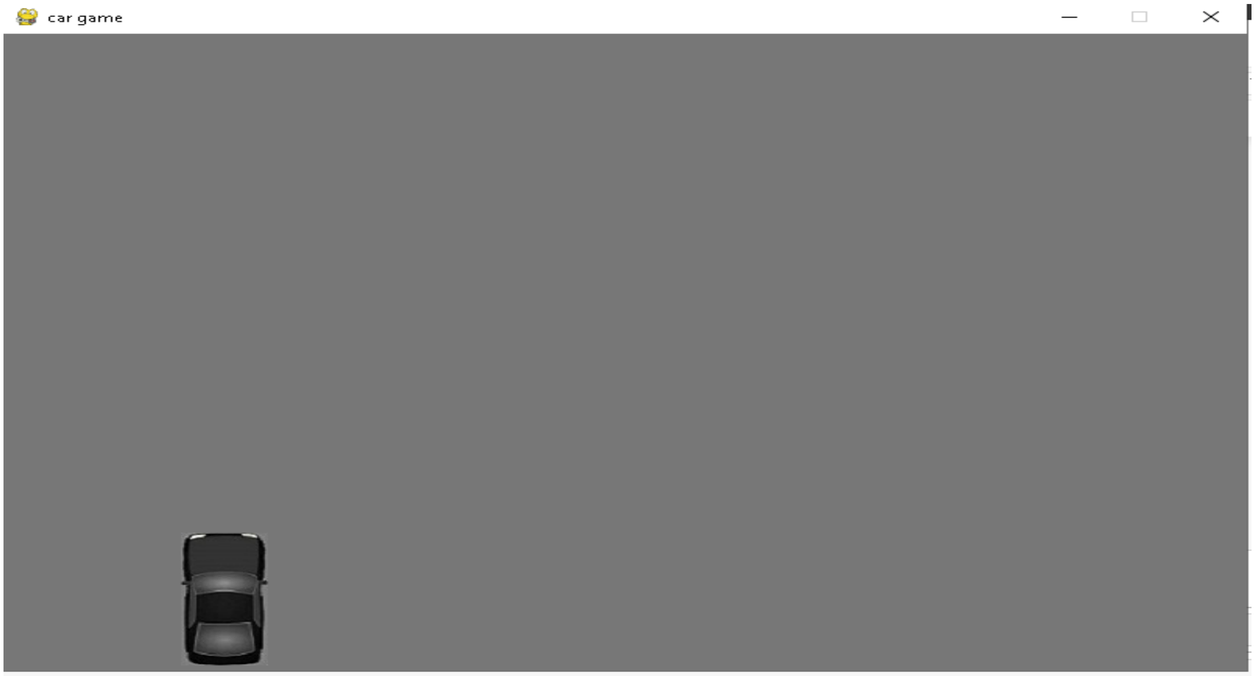
Step-6: Adding CAR image and moving it by Event Handlers.

```
import pygame
pygame.init()
gamedisplays=pygame.display.set_mode((800,600))
pygame.display.set_caption("CAR RACING GAME")
pygame.display.update() # for  update the display
#car loading
carimg=pygame.image.load('car1.jpg')
```

```
#image_appearning
def car(x,y):
    gamedisplays.blit(carimg,(x,y))
#game loop
def game_loop():
    x_change = 0
    x=400
    y=470
    running = True
    while running:
        for event in pygame.event.get():
            if event.type == pygame.QUIT:
                running = False
        #moving on x-y coordinate
        if event.type == pygame.KEYDOWN:
            if event.key == pygame.K_LEFT:
                x_change = -5
            if event.key == pygame.K_RIGHT:
                x_change = 5
        if event.type == pygame.KEYUP:
            if event.key == pygame.K_LEFT or event.key == pygame.K_RIGHT:
                x_change = 0
        x+= x_change
        #background color
        gamedisplays.fill((119,119,119))
        #calling car function
        car(x,y)
        #update the game
        pygame.display.update()
game_loop()
pygame.quit()
```

quit()

In this step, add two new function game_loop() and car() and pygame.image.load() method. This pygame.image.load() method used for load the car image. This method get image location as input. In the game_loop(), add close button logic, add update module and background color logic. And car() function for calling the car function. The car function used for handling car location, this function gets two inputs as parameter that represent x, y coordinate. Here, I consider as x and y, x=400 and y=470. Inside the car function, I used gamedisplays.blit(carimg,(()) this method interact with the car and display. Then, for event handling, I write if block code which gets event from screen and then provide corresponding action. Here used two keys left aro and right aro for moving the car left and right direction when key event is KEYDOWN. If user press the left or right key then car moving left or right for 5 pixels for every move. But car not moving when user press KEYUP.



Step-7: Control the Frame Rate

import pygame

pygame.init()

gamedisplays=pygame.display.set_mode((800,600))

pygame.display.set_caption("CAR RACING GAME")

pygame.display.update() # for update the display

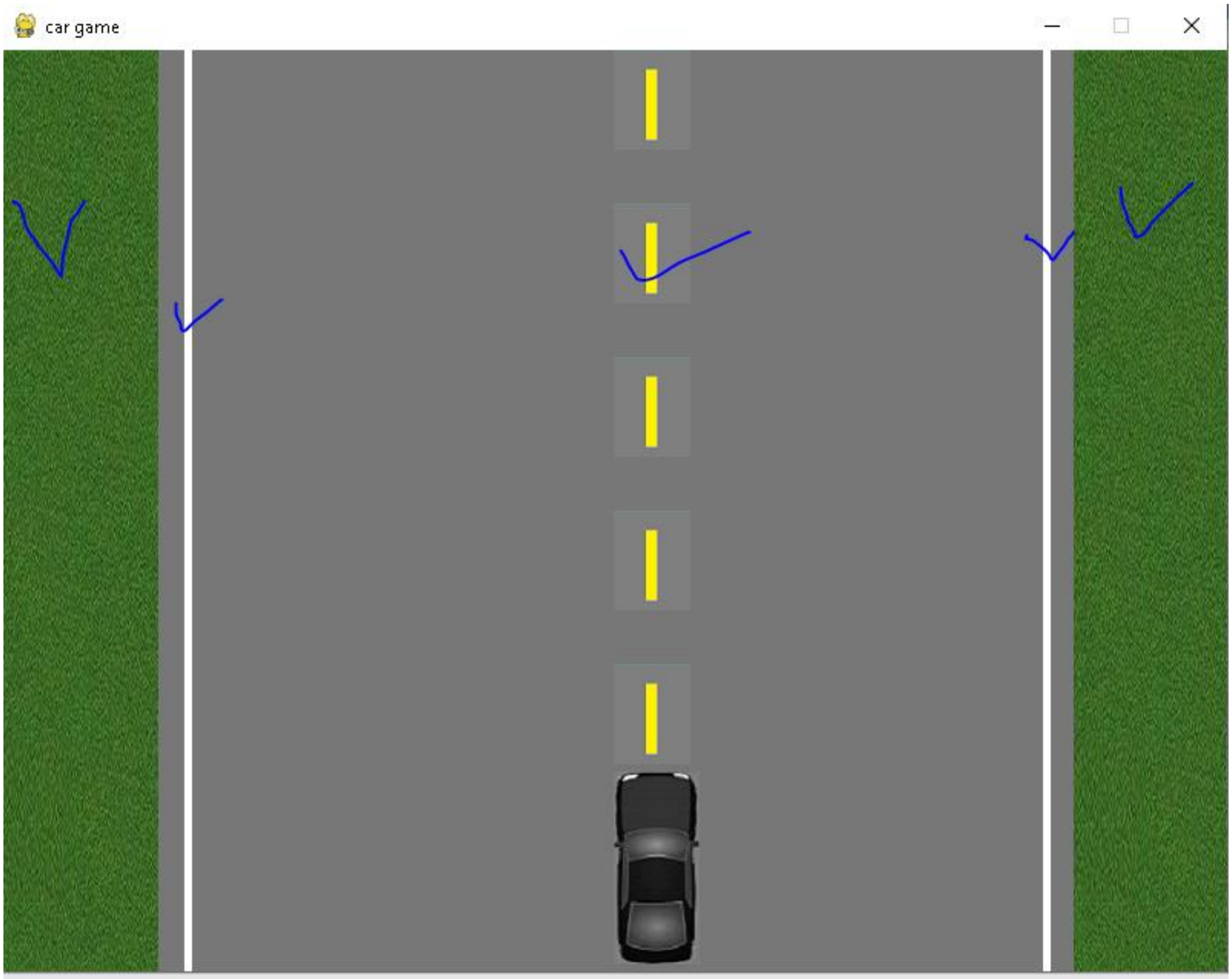
```
#car loading
carimg=pygame.image.load('car1.jpg')

#time module
clock = pygame.time.Clock()
#image_appearning
def car(x,y):
    gamedisplays.blit(carimg,(x,y))
#game loop
def game_loop():
    x_change = 0
    x=400
    y=470
    running = True
    while running:
        for event in pygame.event.get():
            if event.type == pygame.QUIT:
                running = False
        #moving on x-y coordinate
        if event.type == pygame.KEYDOWN:
            if event.key == pygame.K_LEFT:
                x_change = -5
            if event.key == pygame.K_RIGHT:
                x_change = 5
        if event.type == pygame.KEYUP:
            if event.key == pygame.K_LEFT or event.key == pygame.K_RIGHT:
                x_change = 0
        #background color
        gamedisplays.fill((119,119,119))
        #calling car function
        car(x,y)
        #update the game
        pygame.display.update()
        clock.tick(100)
game_loop()
pygame.quit()
quit()
```

In this step, adding time module under the game_loop function. This module used control the car moving speed from left to right or right to left (mean self-car). Clock.tick() method get parameter as an input and type is milliseconds. Here, I used 100 milliseconds.

Step-8: Adding all the background images.

```
import pygame
pygame.init()
gamedisplays=pygame.display.set_mode((800,600))
pygame.display.set_caption("CAR RACING GAME")
pygame.display.update() # for  update the display
#car loading
carimg=pygame.image.load('car1.jpg')
#all the image load
carimg=pygame.image.load('car1.jpg')
backgroundpic=pygame.image.load("grass.jpg")
yellow_strip=pygame.image.load("yellow_strip.jpg")
strip=pygame.image.load("strip.jpg")
intro_background=pygame.image.load("background.jpg")
instruction_background=pygame.image.load("background2.jpg")
#adding the background image
def background():
    gamedisplays.blit(backgroundpic,(0,0))
    gamedisplays.blit(backgroundpic,(700,0))
    gamedisplays.blit(yellow_strip,(400,100))
    gamedisplays.blit(yellow_strip,(400,200))
    gamedisplays.blit(yellow_strip,(400,300))
    gamedisplays.blit(yellow_strip,(400,400))
    gamedisplays.blit(yellow_strip,(400,100))
    gamedisplays.blit(yellow_strip,(400,500))
    gamedisplays.blit(yellow_strip,(400,0))
    gamedisplays.blit(yellow_strip,(400,600))
    gamedisplays.blit(strip,(120,0))
    gamedisplays.blit(strip,(680,0))
#time module
clock = pygame.time.Clock()
#image_appearning
def car(x,y):
    gamedisplays.blit(carimg,(x,y))
#game loop
def game_loop():
    x_change = 0
    x=400
    y=470
    running = True
    while running:
        for event in pygame.event.get():
            if event.type == pygame.QUIT:
                running = False
        #moving on x-y coordinate
        if event.type==pygame.KEYDOWN:
            if event.key==pygame.K_LEFT:
                    x_change=-5
            if event.key==pygame.K_RIGHT:
                    x_change=5
        if event.type==pygame.KEYUP:
            if event.key==pygame.K_LEFT or event.key==pygame.K_RIGHT:
                x_change=0
        x+=x_change
        #background color
        gamedisplays.fill((119,119,119))
        background()
        #calling car function
        car(x,y)
        #update the game
        pygame.display.update()
        clock.tick(100)
game_loop()
pygame.quit()
quit()
```

In this step, I added all the background images which I highlighting the red color. There three types of image like grass for boarder, yellow for strip and white for boundary line. Then create a function name background() which set the images in perfect position like grass. Here, I used grass for boarder so I set the x = 0,y = 0 coordinate for left side boarder and x=700,y=0 for right side boarder. Because I consider width as 800 pixels. And the same process I applied other two color. Then called the background() function from game_loop. After the execute the above code, see the below window,



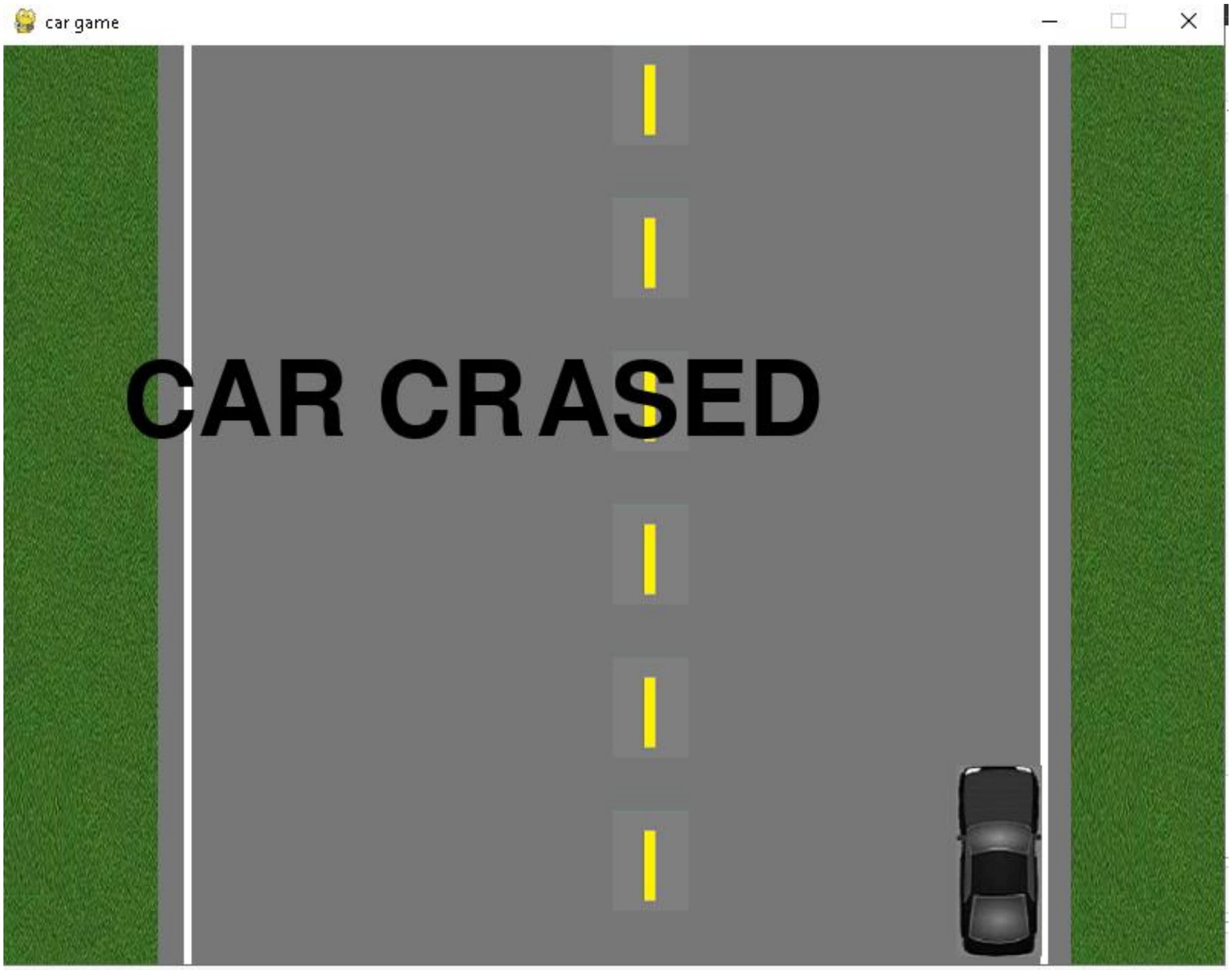
Step-8: Adding restrictions to the CAR movement and Displaying Text Message on the Screen like ‘CAR CRASED’.

```
import pygame
pygame.init()
import time
gamedisplays=pygame.display.set_mode((800,600))
pygame.display.set_caption("CAR RACING GAME")
pygame.display.update() # for  update the display
#car loading
carimg=pygame.image.load('car1.jpg')
```

```
#car width
car_width = 56
#all the image load
pygame.display.set_caption("car game")
carimg=pygame.image.load('car1.jpg')
backgroundpic=pygame.image.load("grass.jpg")
yellow_strip=pygame.image.load("yellow_strip.jpg")
strip=pygame.image.load("strip.jpg")
intro_background=pygame.image.load("background.jpg")
instruction_background=pygame.image.load("background2.jpg")
#crased message
myfont = pygame.font.SysFont("None",100)
render_text = myfont.render("CAR CRASED",1 ,(0,0,0))

#adding the background image
def background():
    gamedisplays.blit(backgroundpic,(0,0))
    gamedisplays.blit(backgroundpic,(700,0))
    gamedisplays.blit(yellow_strip,(400,100))
    gamedisplays.blit(yellow_strip,(400,200))
    gamedisplays.blit(yellow_strip,(400,300))
    gamedisplays.blit(yellow_strip,(400,400))
    gamedisplays.blit(yellow_strip,(400,100))
    gamedisplays.blit(yellow_strip,(400,500))
    gamedisplays.blit(yellow_strip,(400,0))
    gamedisplays.blit(yellow_strip,(400,600))
    gamedisplays.blit(strip,(120,0))
    gamedisplays.blit(strip,(680,0))
#time module
clock = pygame.time.Clock()
#image_appearning
```

```
def car(x,y):
    gamedisplays.blit(carimg,(x,y))
#game loop
def game_loop():
    x_change = 0
    x=400
    y=470
    running = True
    while running:
        for event in pygame.event.get():
            if event.type == pygame.QUIT:
                running = False
        #moving on x-y coordinate
        if event.type==pygame.KEYDOWN:
            if event.key==pygame.K_LEFT:
                    x_change=-5
            if event.key==pygame.K_RIGHT:
                    x_change=5
        if event.type==pygame.KEYUP:
            if event.key==pygame.K_LEFT or event.key==pygame.K_RIGHT:
                x_change=0
        x+=x_change
        #background color
        gamedisplays.fill((119,119,119))
        background()
        #calling car function
        car(x,y)
        if x > 680 - car_width or x < 110:
            gamedisplays.blit(render_text, (80,200))
            pygame.display.update()
            time.sleep(5)
            game_loop()
        #update the game
        pygame.display.update()
        clock.tick(100)
game_loop()
pygame.quit()
quit()
```

In this step, adding the restrictions car movement and print the “CAR CRASHED” message. For this, I write some logic inside game_loop function under the car calling function. Because width of window is 800, for two boarders reduce width from left side 120 and right side 120.So, If the car moves greater than 680 pixels on right that is crashed and less than 110 pixels on left side that is crashed. Like given below,



CAR CRASED

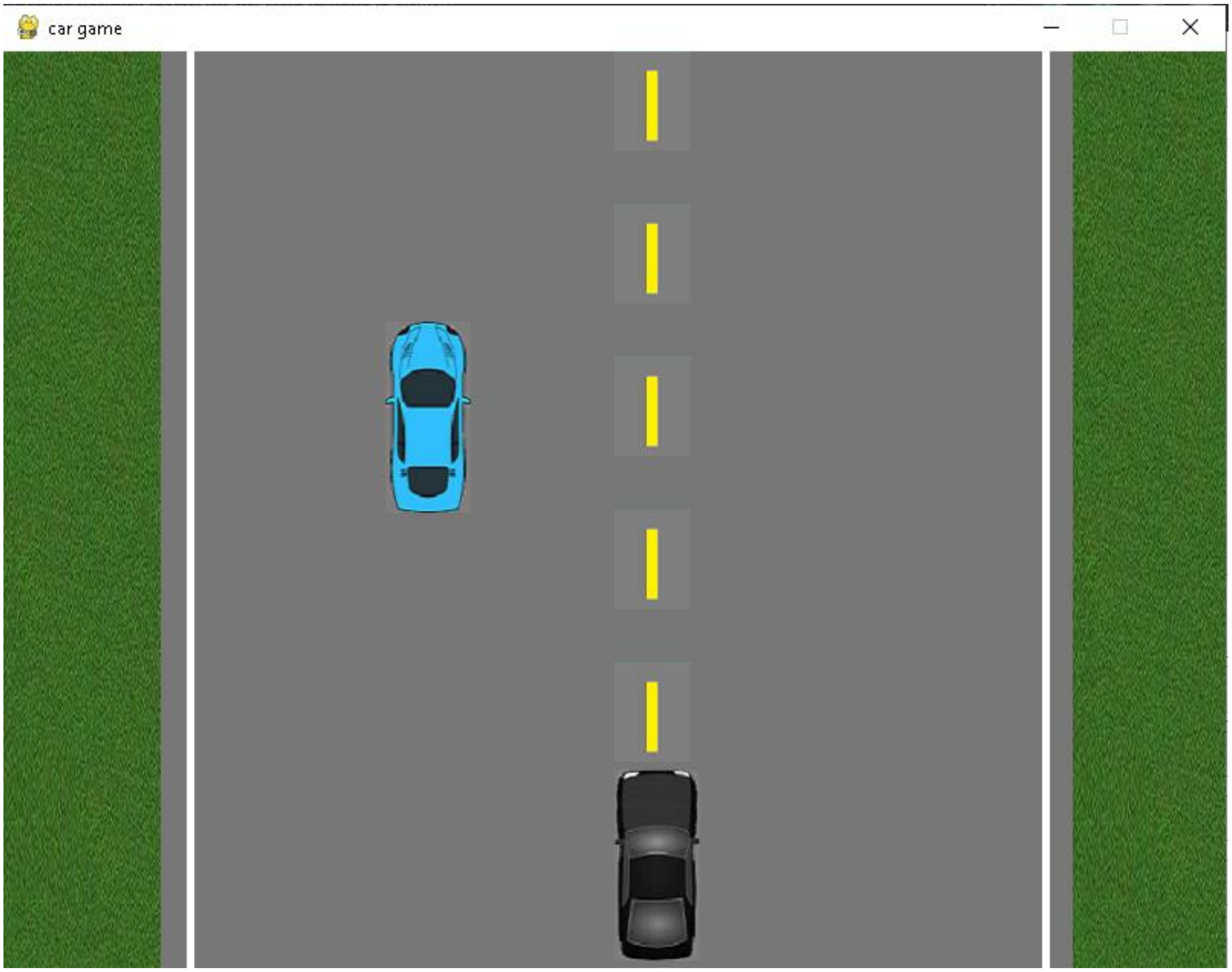
Step-9: Adding the other car on the Screen.

```
import pygame
pygame.init()
import time
import random
gamedisplays=pygame.display.set_mode((800,600))
pygame.display.set_caption("CAR RACING GAME")
pygame.display.update() # for  update the display

#car loading
carimg=pygame.image.load('car1.jpg')
#car width
car_width = 56
#all the image load
pygame.display.set_caption("car game")
carimg=pygame.image.load('car1.jpg')
backgroundpic=pygame.image.load("grass.jpg")
yellow_strip=pygame.image.load("yellow_strip.jpg")
strip=pygame.image.load("strip.jpg")
intro_background=pygame.image.load("background.jpg")
instruction_background=pygame.image.load("background2.jpg")
#crased message
myfont = pygame.font.SysFont("None",100)
render_text = myfont.render("CAR CRASED",1 ,(0,0,0))
#adding the background image
def background():
    gamedisplays.blit(backgroundpic,(0,0))
    gamedisplays.blit(backgroundpic,(700,0))
    gamedisplays.blit(yellow_strip,(400,100))
    gamedisplays.blit(yellow_strip,(400,200))
    gamedisplays.blit(yellow_strip,(400,300))
    gamedisplays.blit(yellow_strip,(400,400))
    gamedisplays.blit(yellow_strip,(400,100))
    gamedisplays.blit(yellow_strip,(400,500))
    gamedisplays.blit(yellow_strip,(400,0))
    gamedisplays.blit(yellow_strip,(400,600))
    gamedisplays.blit(strip,(120,0))
    gamedisplays.blit(strip,(680,0))
#time module
clock = pygame.time.Clock()
#car function for y coordinate
def car_fun(car_x,car_y,car_n):
    if car_n==0:
        obs_pic=pygame.image.load("car1.jpg")
    elif car_n==1:
        obs_pic=pygame.image.load("car2.jpg")
    elif car_n==2:
        obs_pic=pygame.image.load("car2.jpg")
    elif car_n==3:
        obs_pic=pygame.image.load("car4.jpg")
    elif car_n==4:
        obs_pic=pygame.image.load("car5.jpg")
    elif car_n==5:
        obs_pic=pygame.image.load("car6.jpg")
    elif car_n==6:
        obs_pic=pygame.image.load("car7.jpg")
    gamedisplays.blit(obs_pic,(car_x,car_y))
#image_appearning
def car(x,y):
    gamedisplays.blit(carimg,(x,y))
#game loop
def game_loop():
    x_change = 0
```

```
x=400
y=470
car_speed = 10
car_n = 0
y_change = 0
car_x = random.randrange(200,650)
car_y = -750
car_width = 56
car_height = 125
running = True
while running:
    for event in pygame.event.get():
        if event.type == pygame.QUIT:
            running = False
    #moving on x-y coordinate
    if event.type==pygame.KEYDOWN:
        if event.key==pygame.K_LEFT:
                x_change=-5
        if event.key==pygame.K_RIGHT:
                x_change=5
    if event.type==pygame.KEYUP:
        if event.key==pygame.K_LEFT or event.key==pygame.K_RIGHT:
            x_change=0
    x+=x_change
    #background color
    gamedisplays.fill((119,119,119))
    background()
    car_y -= (car_speed/4)
    car_fun(car_x,car_y,car_n)
    car_y += car_speed
    #calling car function
```

```
        car(x,y)
        if x > 680 - car_width or x < 110:
            gamedisplays.blit(render_text, (80,200))
            pygame.display.update()
            time.sleep(5)
            game_loop()
        #update the game
        pygame.display.update()
        clock.tick(100)
game_loop()
pygame.quit()
quit()
```

In this step, Adding the other car controlling logic which are highlighting the red color. First of all define some variable such as car_speed for car speed, car_n for number car, y_change for y-coordinate, car_x for movement range on x-coordinate when car coming top to bottom on y-axis. The range is 200 to 650 because for two side boarders reduce the other length. And car_y for y-axis when car ending bottom, car_width for car width and car_height for car height. Then call the car_fun function for loading the car corresponding car number. If you run above code, see the below window,



Step-9: Adding CRASH logic and Adding Score and increasing the Level of the Game.

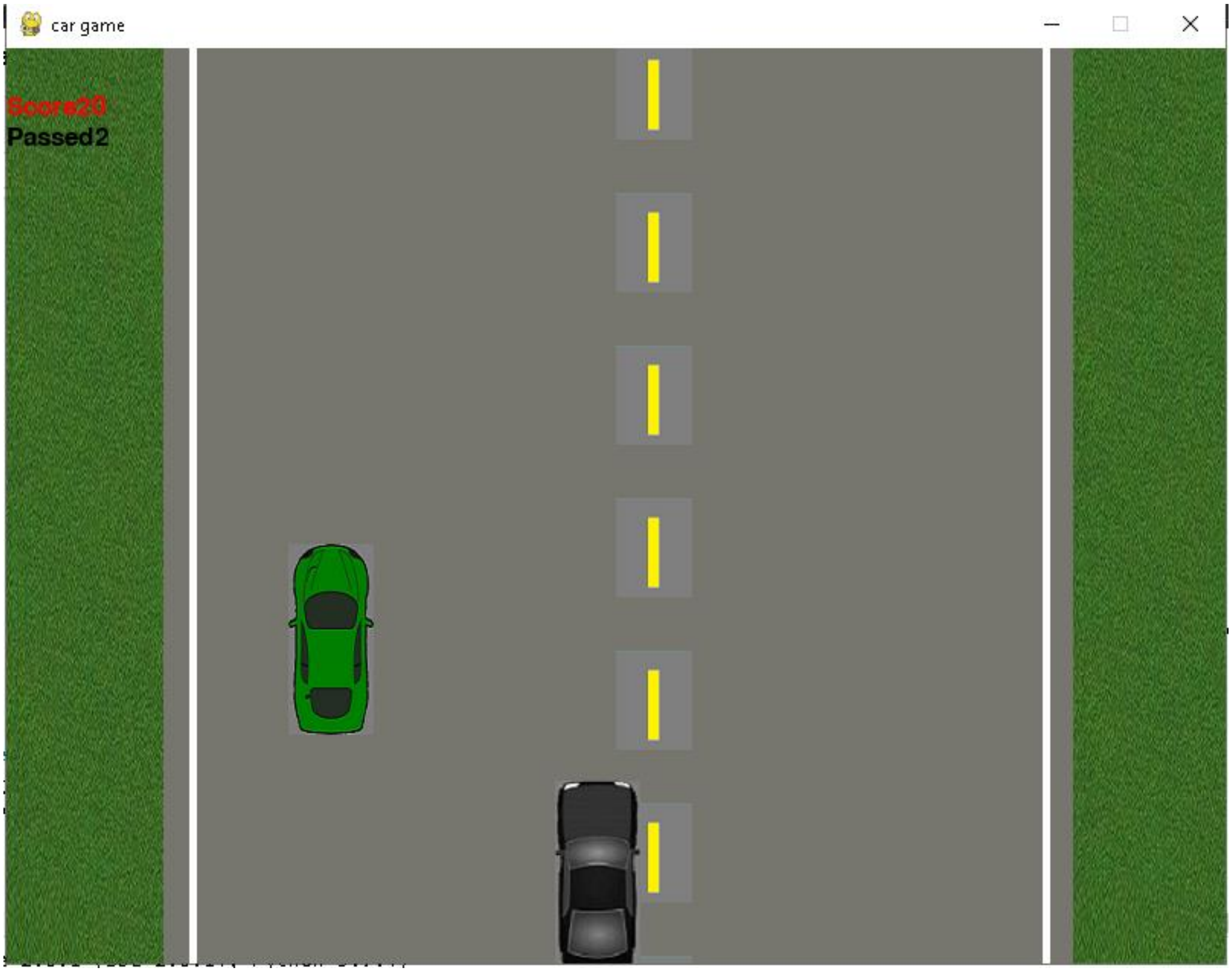
```
import sys
import time
import random
import pygame
pygame.init()
gray=(119,118,110)
black=(0,0,0)
red=(255,0,0)
green=(0,200,0)
blue=(0,0,200)
bright_red=(255,0,0)
bright_green=(0,255,0)
```

```
bright_blue=(0,0,255)
display_width=800
display_height=600

#dram display
gamedisplays=pygame.display.set_mode((display_width,display_height))
#get time
clock=pygame.time.Clock()
#all the image load
pygame.display.set_caption("car game")
carimg=pygame.image.load('car1.jpg')
backgroundpic=pygame.image.load("grass.jpg")
yellow_strip=pygame.image.load("yellow_strip.jpg")
strip=pygame.image.load("strip.jpg")
intro_background=pygame.image.load("background.jpg")
instruction_background=pygame.image.load("background2.jpg")
#car width
car_width=56
def obstacle(obs_startx,obs_starty,obs):
    if obs==0:
        obs_pic=pygame.image.load("car1.jpg")
    elif obs==1:
        obs_pic=pygame.image.load("car2.jpg")
    elif obs==2:
        obs_pic=pygame.image.load("car2.jpg")
    elif obs==3:
        obs_pic=pygame.image.load("car4.jpg")
    elif obs==4:
        obs_pic=pygame.image.load("car5.jpg")
    elif obs==5:
        obs_pic=pygame.image.load("car6.jpg")
    elif obs==6:
        obs_pic=pygame.image.load("car7.jpg")
    gamedisplays.blit(obs_pic,(obs_startx,obs_starty))
def score_system(passed,score):
    font=pygame.font.SysFont(None,25)
    text=font.render("Passed"+str(passed),True,black)
    score=font.render("Score"+str(score),True,red)
    gamedisplays.blit(text,(0,50))
    gamedisplays.blit(score,(0,30))
def text_objects(text,font):
    textsurface=font.render(text,True,black)
    return textsurface,textsurface.get_rect()
def message_display(text):
    largetext=pygame.font.Font("freesansbold.ttf",80)
    textsurf,textrect=text_objects(text,largetext)
    textrect.center=((display_width/2),(display_height/2))
    gamedisplays.blit(textsurf,textrect)
    pygame.display.update()
    time.sleep(3)
    game_loop()
def crash():
    message_display("YOU CRASHED")
def background():
    gamedisplays.blit(backgroundpic,(0,0))
    gamedisplays.blit(backgroundpic,(0,200))
    gamedisplays.blit(backgroundpic,(0,400))
    gamedisplays.blit(backgroundpic,(700,0))
    gamedisplays.blit(backgroundpic,(700,200))
    gamedisplays.blit(backgroundpic,(700,400))
    gamedisplays.blit(yellow_strip,(400,0))
    gamedisplays.blit(yellow_strip,(400,100))
    gamedisplays.blit(yellow_strip,(400,200))
    gamedisplays.blit(yellow_strip,(400,300))
    gamedisplays.blit(yellow_strip,(400,400))
    gamedisplays.blit(yellow_strip,(400,500))
    gamedisplays.blit(strip,(120,0))
    gamedisplays.blit(strip,(120,100))
    gamedisplays.blit(strip,(120,200))
    gamedisplays.blit(strip,(680,0))
    gamedisplays.blit(strip,(680,100))
    gamedisplays.blit(strip,(680,200))
def car(x,y):
    gamedisplays.blit(carimg,(x,y))
def game_loop():
    global pause
    x=(display_width*0.45)
    y=(display_height*0.8)
    x_change=0
    obstacle_speed=9
    obs=0
    y_change=0
    obs_startx=random.randrange(200,(display_width-200))
    obs_starty=-750
    obs_width=56
    obs_height=125
    passed=0
    level=0
    score=0
    y2=7
    fps=120
    runing=False
    while not  runing:
```

```
for event in pygame.event.get():
    if event.type==pygame.QUIT:
        pygame.quit()
        quit()
    if event.type==pygame.KEYDOWN:
        if event.key==pygame.K_LEFT:
            x_change=-5
        if event.key==pygame.K_RIGHT:
            x_change=5
        if event.key==pygame.K_a:
            obstacle_speed+=2
        if event.key==pygame.K_b:
            obstacle_speed-=2
    if event.type==pygame.KEYUP:
        if event.key==pygame.K_LEFT or event.key==pygame.K_RIGHT:
            x_change=0
x+=x_change
pause=True
gamedisplays.fill(gray)
rel_y=y2%backgroundpic.get_rect().width
gamedisplays.blit(backgroundpic,(0,rel_y-backgroundpic.get_rect().width))
gamedisplays.blit(backgroundpic,(700,rel_y-backgroundpic.get_rect().width))
if rel_y<800:
    gamedisplays.blit(backgroundpic,(0,rel_y))
    gamedisplays.blit(backgroundpic,(700,rel_y))
    gamedisplays.blit(yellow_strip,(400,rel_y))
    gamedisplays.blit(yellow_strip,(400,rel_y+100))
    gamedisplays.blit(yellow_strip,(400,rel_y+200))
    gamedisplays.blit(yellow_strip,(400,rel_y+300))
    gamedisplays.blit(yellow_strip,(400,rel_y+400))
    gamedisplays.blit(yellow_strip,(400,rel_y+500))
    gamedisplays.blit(yellow_strip,(400,rel_y-100))
    gamedisplays.blit(strip,(120,rel_y-200))
    gamedisplays.blit(strip,(120,rel_y+20))
    gamedisplays.blit(strip,(120,rel_y+30))
    gamedisplays.blit(strip,(680,rel_y-100))
    gamedisplays.blit(strip,(680,rel_y+20))
    gamedisplays.blit(strip,(680,rel_y+30))
y2+=obstacle_speed
obs_starty-=(obstacle_speed/4)
obstacle(obs_startx,obs_starty,obs)
obs_starty+=obstacle_speed
car(x,y)
score_system(passed,score)
if x>690-car_width or x<110:
    crash()
if x>display_width-(car_width+110) or x<110:
    crash()
if obs_starty>display_height:
    obs_starty=0-obs_height
    obs_startx=random.randrange(170,(display_width-170))
    obs=random.randrange(0,7)
    passed=passed+1
    score=passed*10
    if int(passed)%10==0:
        level=level+1
        obstacle_speed+2
        largetext=pygame.font.Font("freesansbold.ttf",80)
        textsurf,textrect=text_objects("LEVEL"+str(level),largetext)
        textrect.center=((display_width/2),(display_height/2))
        gamedisplays.blit(textsurf,textrect)
        pygame.display.update()
```

```
                time.sleep(3)
        if y<obs_starty+obs_height:
            if x > obs_startx and x < obs_startx + obs_width or x+car_width > obs_startx and x+car_width < obs_startx+obs_width:
                crash()
        pygame.display.update()
        clock.tick(60)
game_loop()
pygame.quit()
sys.quit()
```

In this step, adding crash, scoring and level increasing logic. At first, define the crash () function, inside the crash function call the message_display() function, this function get a string as an input and then send the text_objects() function with text font. This function returns the text surface and text surface rectangle. The returns value gets message_display() function then blit to the display. And again call the game_loop() function. Then, define the score_system() function, this function gets two inputs ,these are passed, score, both the variable initialize by 0. For every car crossing, score will be increasing 10 unit and if the score is divisible by 10 then increase the level one. And for every level car speed will increase 2 unit but if user want to increase the car speed at any time just press the “a” for each click car speed will increase 2 unit and for decrease car speed press the “b” for each click car speed decrease 2 unit. If execute the above the code, see the below figure



Step-10: Adding Intro Image and Buttons and button functionality.

```
import sys
import time
import random
import pygame
pygame.init()
gray=(119,118,110)
black=(0,0,0)
red=(255,0,0)
green=(0,200,0)
blue=(0,0,200)
bright_red=(255,0,0)
bright_green=(0,255,0)
```

```
bright_blue=(0,0,255)
display_width=800
display_height=600
#dram display
gamedisplays=pygame.display.set_mode((display_width,display_height))
#get time
clock=pygame.time.Clock()
#all the image load
pygame.display.set_caption("car game")
carimg=pygame.image.load('car1.jpg')
backgroundpic=pygame.image.load("grass.jpg")
yellow_strip=pygame.image.load("yellow_strip.jpg")
strip=pygame.image.load("strip.jpg")
intro_background=pygame.image.load("background.jpg")
instruction_background=pygame.image.load("background2.jpg")
#car width
car_width=56
def button(msg,x,y,w,h,ic,ac,action=None):
    mouse=pygame.mouse.get_pos()
    click=pygame.mouse.get_pressed()
    if x+w>mouse[0]>x and y+h>mouse[1]>y:
        pygame.draw.rect(gamedisplays,ac,(x,y,w,h))
        if click[0]==1 and action!=None:
            if action=="play":
                countdown()
            elif action=="quit":
                pygame.quit()
                quit()
                sys.exit()
            elif action=="intro":
                introduction()
            elif action=="menu":
                intro_loop()
            elif action=="pause":
                paused()
            elif action=="unpause":
                unpaused()
    else:
        pygame.draw.rect(gamedisplays,ic,(x,y,w,h))
    smalltext=pygame.font.Font("freesansbold.ttf",20)
    textsurf,textrect=text_objects(msg,smalltext)
    textrect.center=((x+(w/2)),(y+(h/2)))
    gamedisplays.blit(textsurf,textrect)
def intro_loop():
    intro=True
    while intro:
        for event in pygame.event.get():
            if event.type==pygame.QUIT:
                pygame.quit()
                quit()
                sys.exit()
        gamedisplays.blit(intro_background,(0,0))
        largetext=pygame.font.Font('freesansbold.ttf',115)
        TextSurf,TextRect=text_objects("CAR GAME",largetext)
        TextRect.center=(400,100)
        gamedisplays.blit(TextSurf,TextRect)
        button("START",150,520,100,50,green,bright_green,"play")
        button("QUIT",550,520,100,50,red,bright_red,"quit")
        button("INSTRUCTION",300,520,200,50,blue,bright_blue,"intro")
        pygame.display.update()
        clock.tick(50)
```

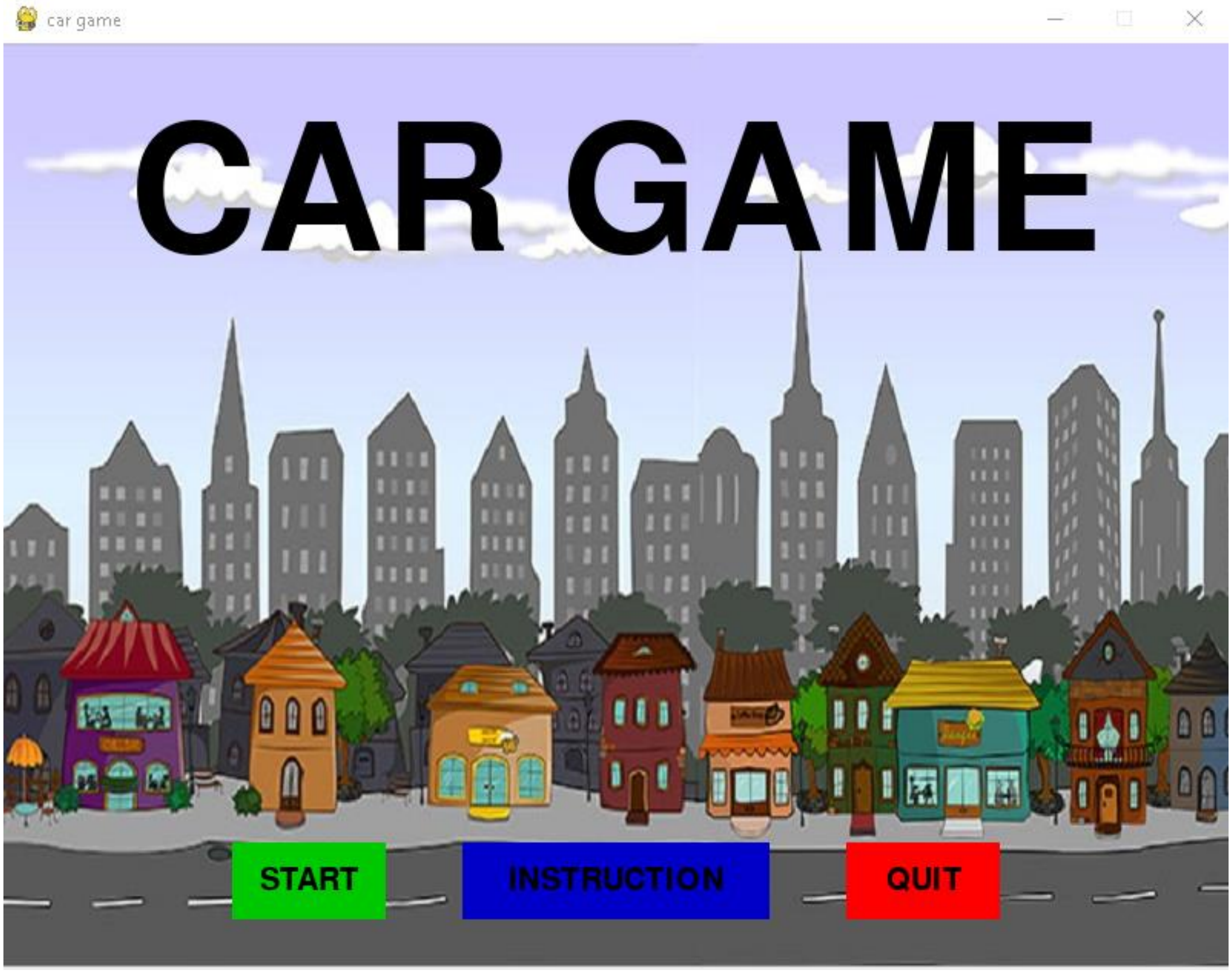
```
def obstacle(obs_startx,obs_starty,obs):
    if obs==0:
        obs_pic=pygame.image.load("car1.jpg")
    elif obs==1:
        obs_pic=pygame.image.load("car2.jpg")
    elif obs==2:
        obs_pic=pygame.image.load("car2.jpg")
    elif obs==3:
        obs_pic=pygame.image.load("car4.jpg")
    elif obs==4:
        obs_pic=pygame.image.load("car5.jpg")
    elif obs==5:
        obs_pic=pygame.image.load("car6.jpg")
    elif obs==6:
        obs_pic=pygame.image.load("car7.jpg")
    gamedisplays.blit(obs_pic,(obs_startx,obs_starty))
  def score_system(passed,score):
    font=pygame.font.SysFont(None,25)
    text=font.render("Passed"+str(passed),True,black)
    score=font.render("Score"+str(score),True,red)
    gamedisplays.blit(text,(0,50))
    gamedisplays.blit(score,(0,30))
def text_objects(text,font):
    textsurface=font.render(text,True,black)
    return textsurface,textsurface.get_rect()
def message_display(text):
    largetext=pygame.font.Font("freesansbold.ttf",80)
    textsurf,textrect=text_objects(text,largetext)
    textrect.center=((display_width/2),(display_height/2))
    gamedisplays.blit(textsurf,textrect)
    pygame.display.update()
    time.sleep(3)
    game_loop()
def crash():
    message_display("YOU CRASHED")
def background():
    gamedisplays.blit(backgroundpic,(0,0))
    gamedisplays.blit(backgroundpic,(0,200))
    gamedisplays.blit(backgroundpic,(0,400))
    gamedisplays.blit(backgroundpic,(700,0))
    gamedisplays.blit(backgroundpic,(700,200))
    gamedisplays.blit(backgroundpic,(700,400))
    gamedisplays.blit(yellow_strip,(400,0))
    gamedisplays.blit(yellow_strip,(400,100))
    gamedisplays.blit(yellow_strip,(400,200))
    gamedisplays.blit(yellow_strip,(400,300))
    gamedisplays.blit(yellow_strip,(400,400))
    gamedisplays.blit(yellow_strip,(400,500))
    gamedisplays.blit(strip,(120,0))
    gamedisplays.blit(strip,(120,100))
    gamedisplays.blit(strip,(120,200))
    gamedisplays.blit(strip,(680,0))
    gamedisplays.blit(strip,(680,100))
    gamedisplays.blit(strip,(680,200))
def car(x,y):
    gamedisplays.blit(carimg,(x,y))
def game_loop():
    global pause
    x=(display_width*0.45)
    y=(display_height*0.8)
```

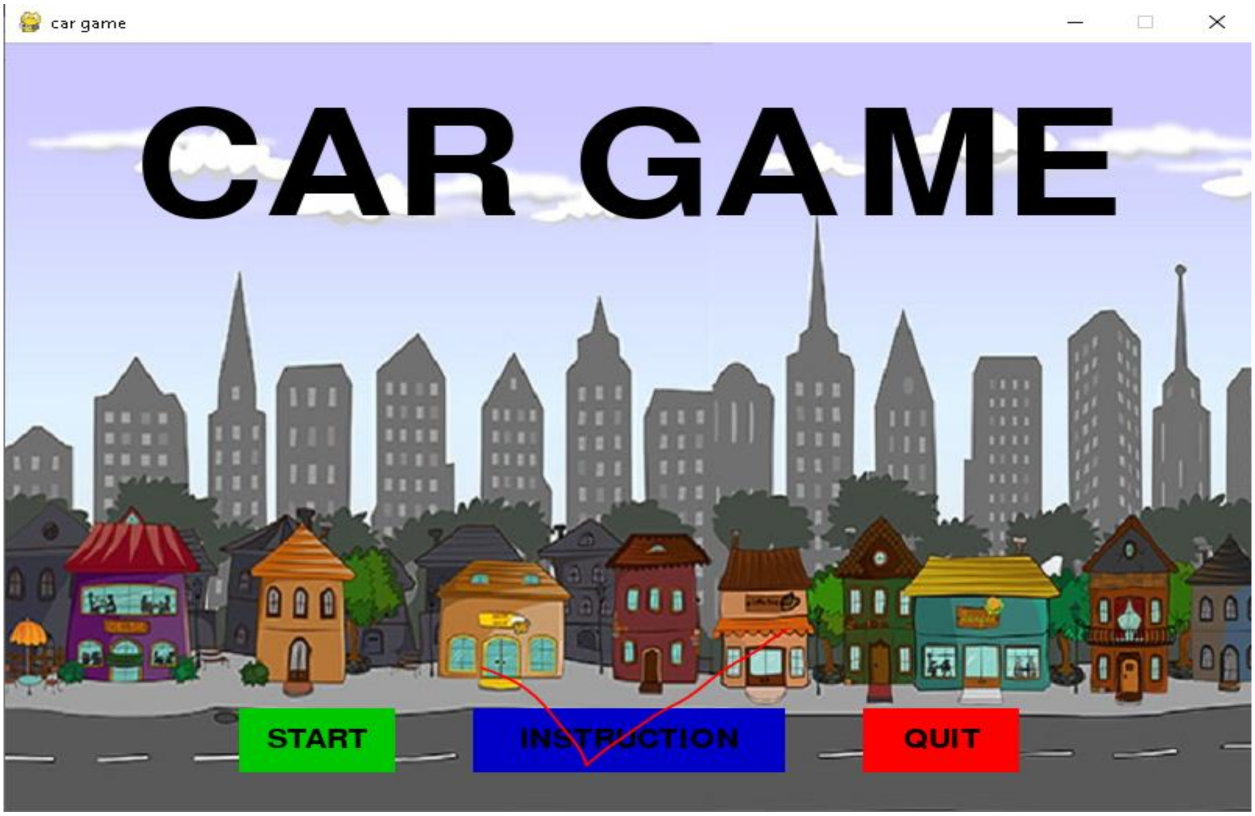
```
x_change=0
obstacle_speed=9
obs=0
y_change=0
obs_startx=random.randrange(200,(display_width-200))
obs_starty=-750
obs_width=56
obs_height=125
passed=0
level=0
score=0
y2=7
fps=120
runing=False
while not  runing:
    for event in pygame.event.get():
        if event.type==pygame.QUIT:
            pygame.quit()
            quit()
        if event.type==pygame.KEYDOWN:
            if event.key==pygame.K_LEFT:
                x_change=-5
            if event.key==pygame.K_RIGHT:
                x_change=5
            if event.key==pygame.K_a:
                obstacle_speed+=2
            if event.key==pygame.K_b:
                obstacle_speed-=2
        if event.type==pygame.KEYUP:
            if event.key==pygame.K_LEFT or event.key==pygame.K_RIGHT:
                x_change=0
```

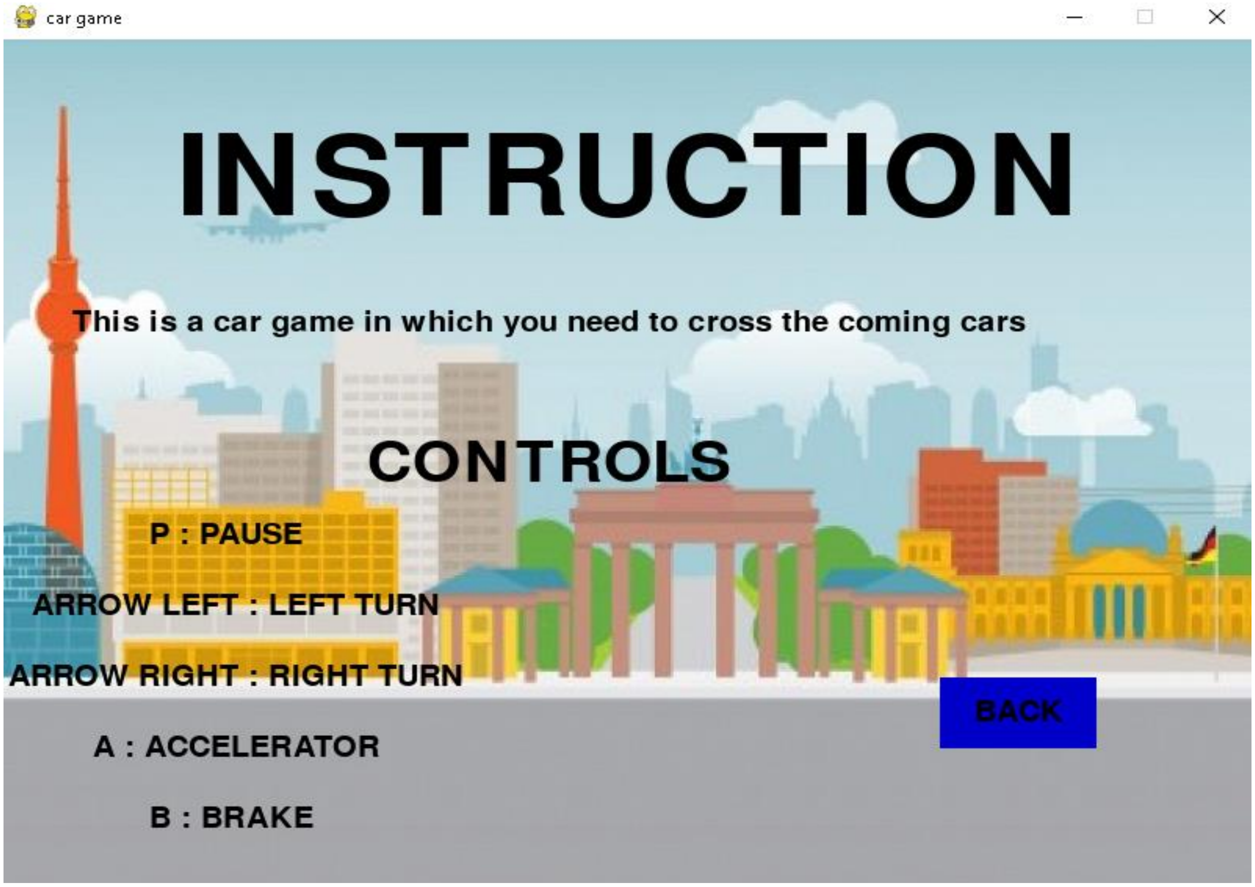
```
x+=x_change
pause=True
gamedisplays.fill(gray)
rel_y=y2%backgroundpic.get_rect().width
gamedisplays.blit(backgroundpic,(0,rel_y-backgroundpic.get_rect().width))
gamedisplays.blit(backgroundpic,(700,rel_y-backgroundpic.get_rect().width))
if rel_y<800:
    gamedisplays.blit(backgroundpic,(0,rel_y))
    gamedisplays.blit(backgroundpic,(700,rel_y))
    gamedisplays.blit(yellow_strip,(400,rel_y))
    gamedisplays.blit(yellow_strip,(400,rel_y+100))
    gamedisplays.blit(yellow_strip,(400,rel_y+200))
    gamedisplays.blit(yellow_strip,(400,rel_y+300))
    gamedisplays.blit(yellow_strip,(400,rel_y+400))
    gamedisplays.blit(yellow_strip,(400,rel_y+500))
    gamedisplays.blit(yellow_strip,(400,rel_y-100))
    gamedisplays.blit(strip,(120,rel_y-200))
    gamedisplays.blit(strip,(120,rel_y+20))
    gamedisplays.blit(strip,(120,rel_y+30))
    gamedisplays.blit(strip,(680,rel_y-100))
    gamedisplays.blit(strip,(680,rel_y+20))
    gamedisplays.blit(strip,(680,rel_y+30))
y2+=obstacle_speed
obs_starty-=(obstacle_speed/4)
obstacle(obs_startx,obs_starty,obs)
obs_starty+=obstacle_speed
car(x,y)
score_system(passed,score)
if x>690-car_width or x<110:
    crash()
if x>display_width-(car_width+110) or x<110:
```

```
            crash()
        if obs_starty>display_height:
            obs_starty=0-obs_height
            obs_startx=random.randrange(170,(display_width-170))
            obs=random.randrange(0,7)
            passed=passed+1
            score=passed*10
            if int(passed)%10==0:
                level=level+1
                obstacle_speed+2
                largetext=pygame.font.Font("freesansbold.ttf",80)
                textsurf,textrect=text_objects("LEVEL"+str(level),largetext)
                textrect.center=((display_width/2),(display_height/2))
                gamedisplays.blit(textsurf,textrect)
                pygame.display.update()
                time.sleep(3)
        if y<obs_starty+obs_height:
            if x > obs_startx and x < obs_startx + obs_width or x+car_width > obs_startx and x+car_width < obs_startx+obs_width:
                crash()
        button("Pause",650,0,150,50,blue,bright_blue,"pause")
        pygame.display.update()
        clock.tick(60)
intro_loop()
game_loop()
pygame.quit()
sys.quit()
```

In this section, add the home image and three button like start, instruction and quit. For that, create button () function. This function gets five inputs such as x,y coordinate, width, height and action. Inside the button () function used three built in function pygame.mouse.get_pos() for mouse coordinate, pygame.mouse.get_pressed() for get mouse interact, pygame.draw.rect() for draw the rectangle. At first, Check the (x + w) value is greater than mouse x-coordinate and (y + h) value is less than mouse y-coordinate. If both condition is true then pygame.draw.rect() function is working. After that, check the mouse click or not. If click == 1 and action is none then check action is equal to play, quit, intro, menu, pause, unpause or not. If action == play, then game start or action == quit, then game go to closed or action == intro, then go to intro () function and user see introduction to play the game or action == menu, the user back on the main menu or action == pause, then game go to pause or action == unpause, then game to unpause but if above the condition not true then execute the draw function.







INSTRUCTION

This is a car game in which you need to cross the coming cars

CONTROLS

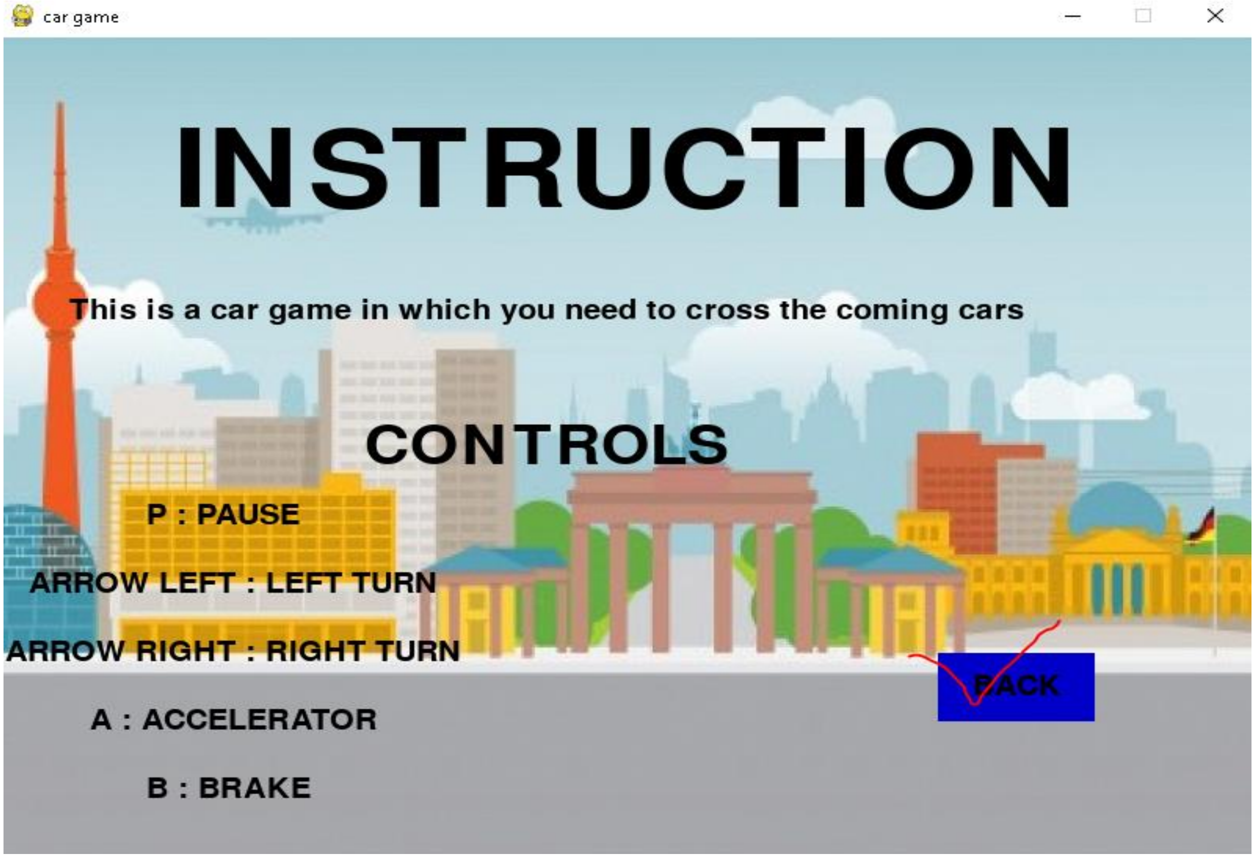
P : PAUSE

ARROW LEFT : LEFT TURN

ARROW RIGHT : RIGHT TURN

A : ACCELERATOR

B : BRAKE



INSTRUCTION

This is a car game in which you need to cross the coming cars

CONTROLS

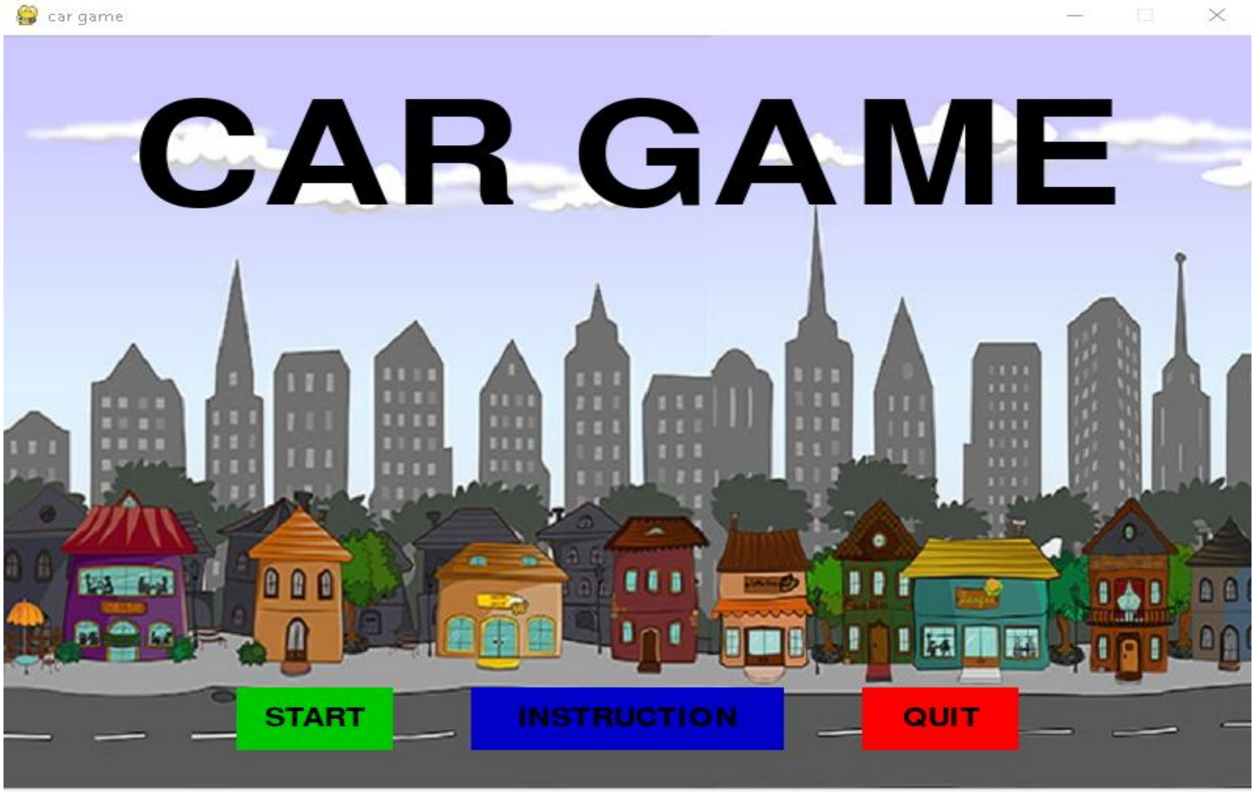
P : PAUSE

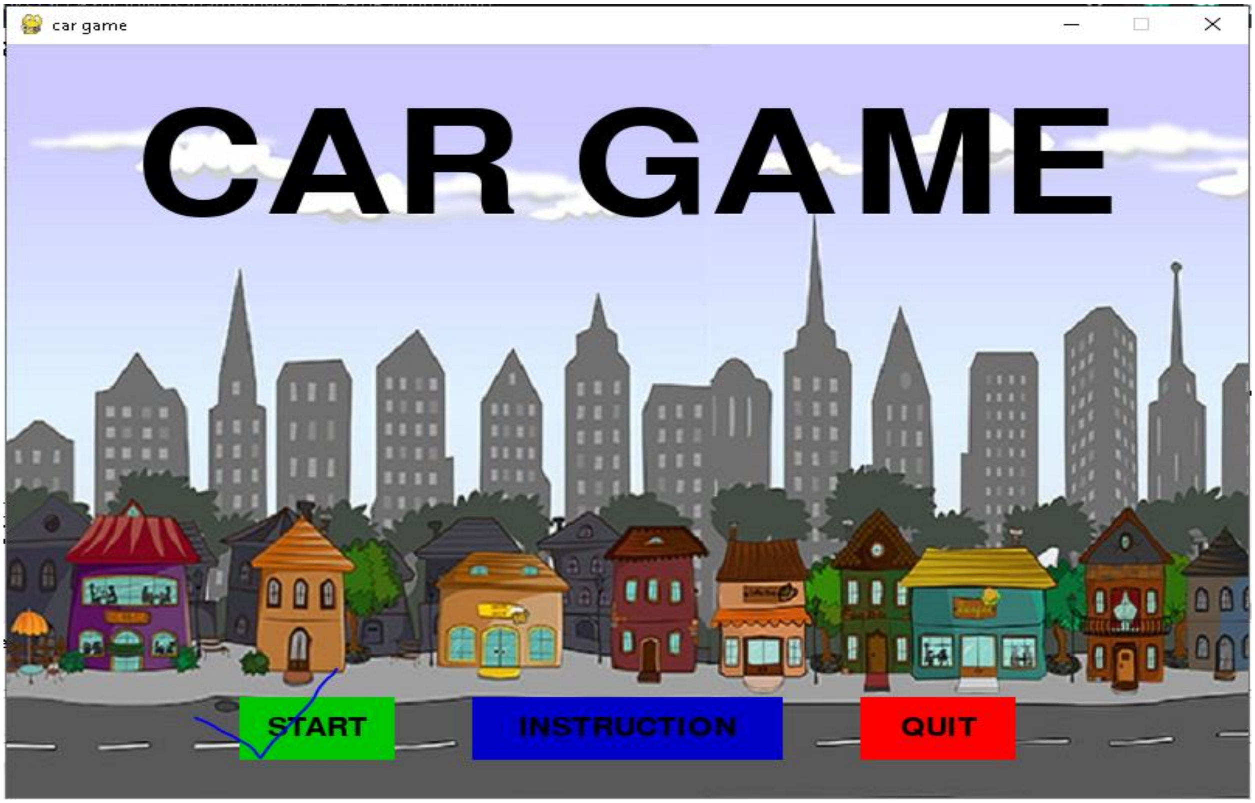
ARROW LEFT : LEFT TURN

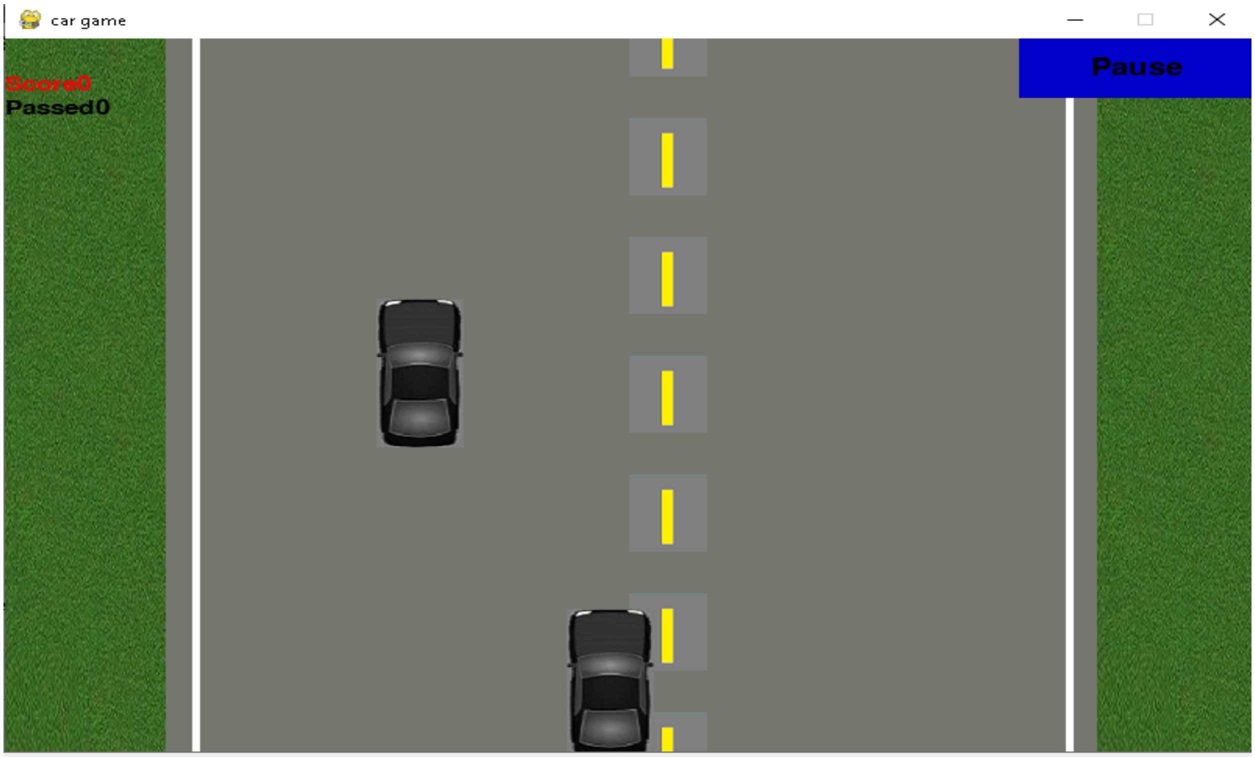
ARROW RIGHT : RIGHT TURN

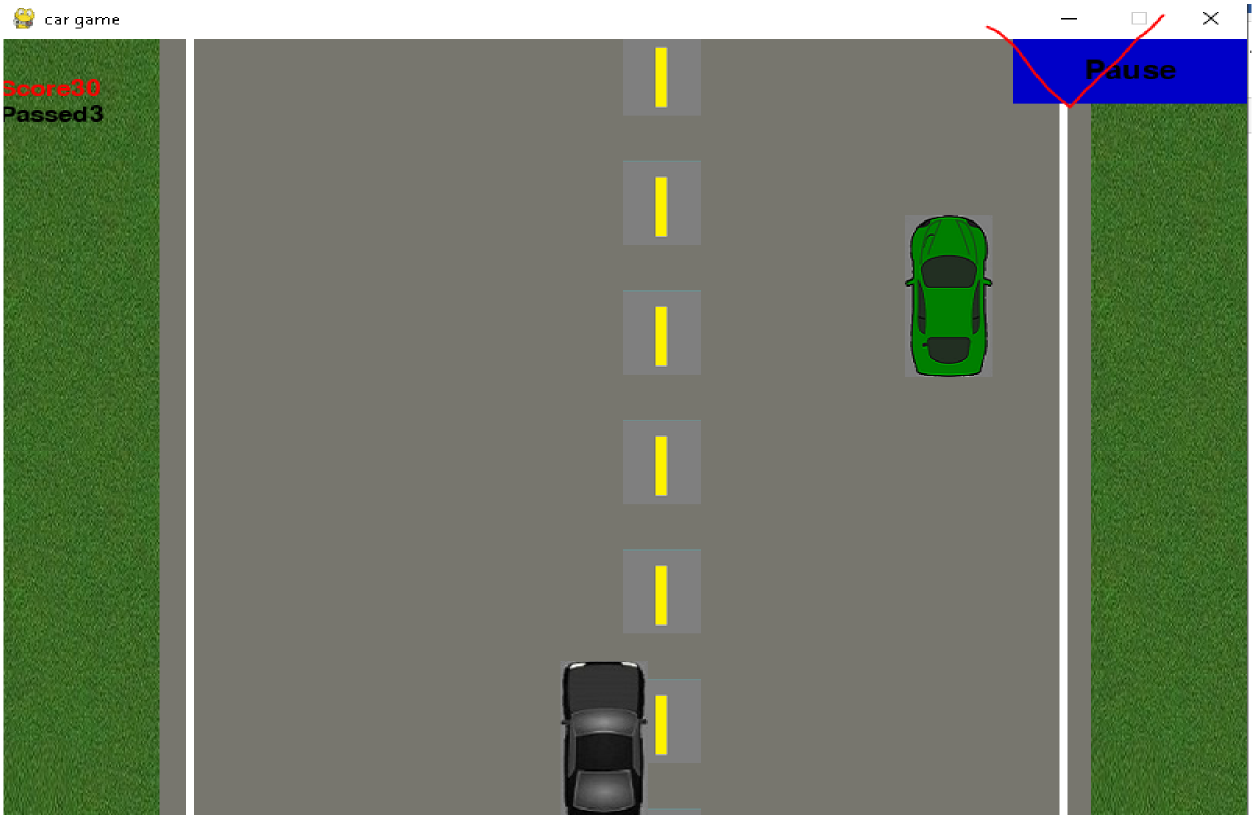
A : ACCELERATOR

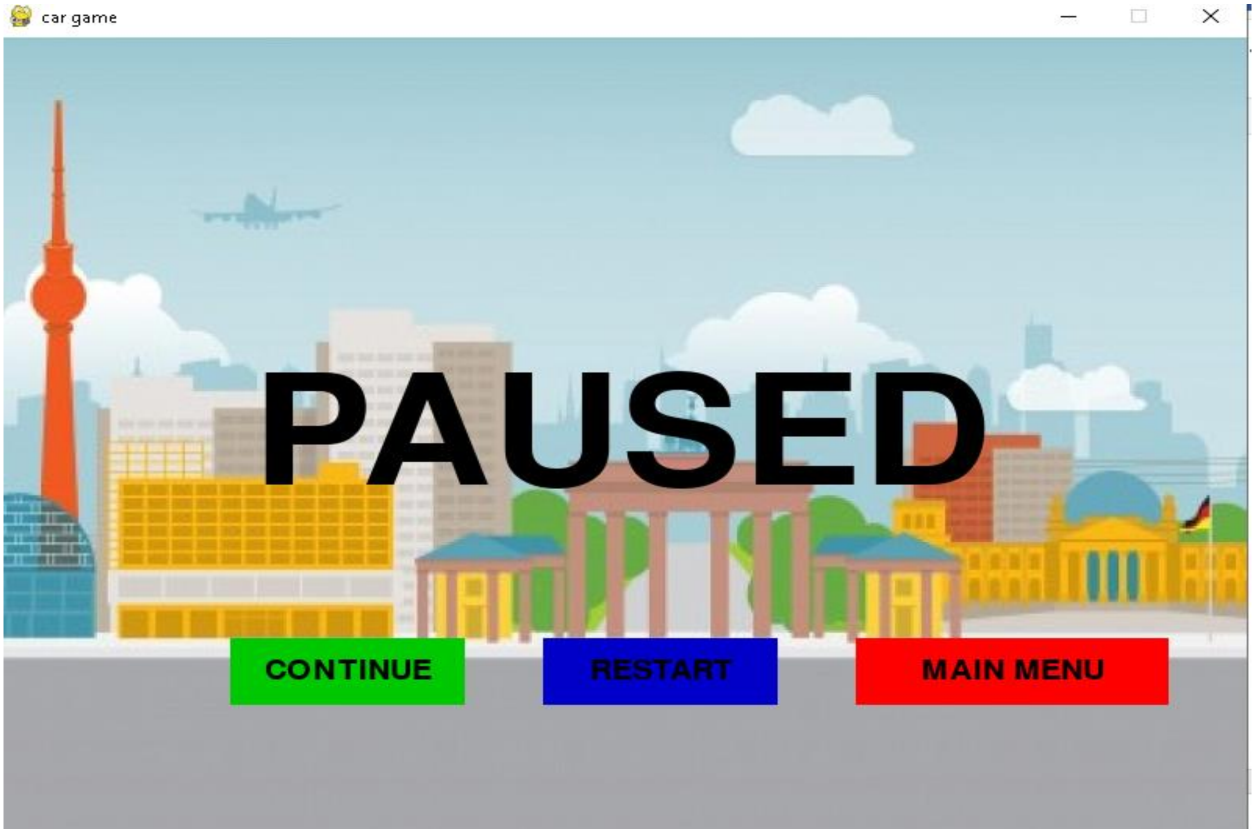
B : BRAKE

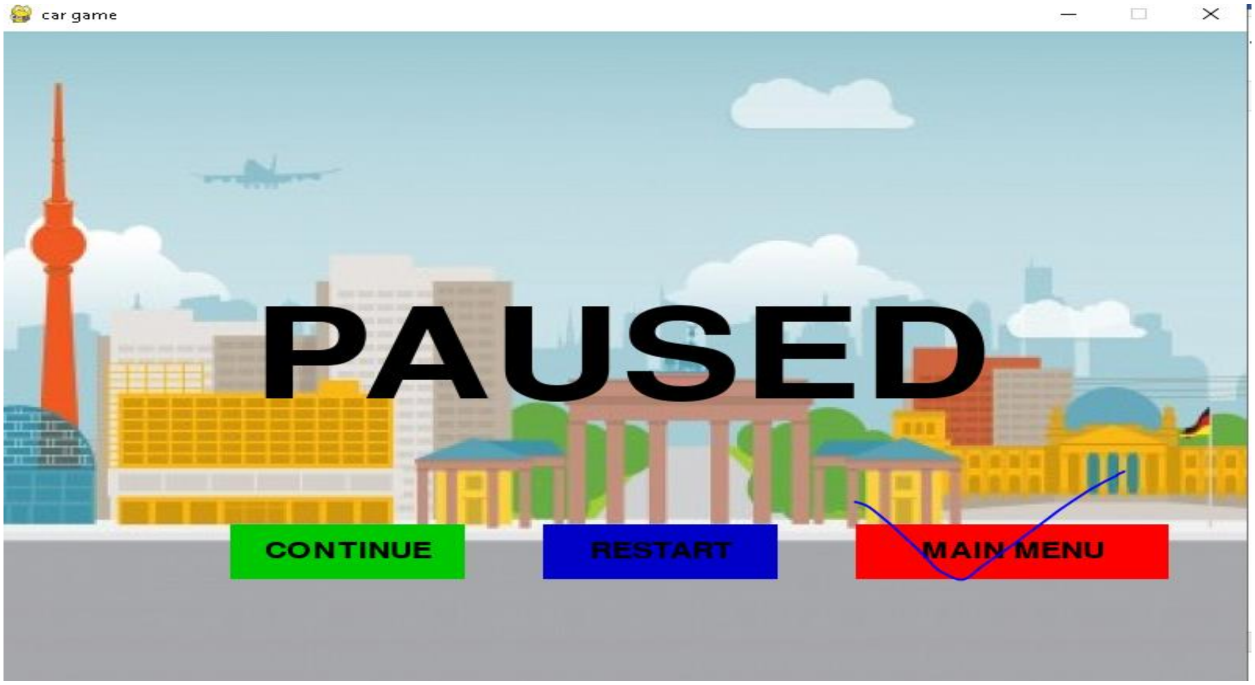


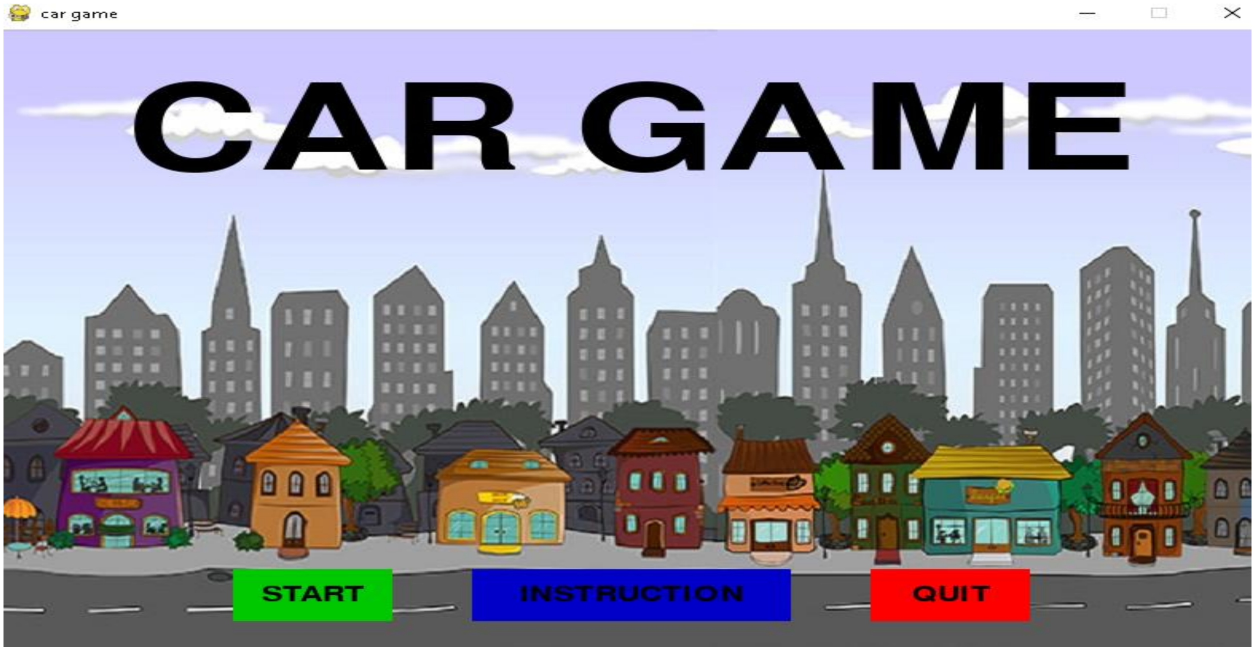

car game
CAR GAME
START
INSTRUCTION
QUIT


car game
Score0
Passed0
Pause


car game
Score30
Passed3
Pause


car game
PAUSED
CONTINUE
RESTART
MAIN MENU





Step-11: Finally, add the above all function and methods.

```
import sys
import time
import random
import pygame
pygame.init()
gray=(119,118,110)
black=(0,0,0)
red=(255,0,0)
green=(0,200,0)
blue=(0,0,200)
bright_red=(255,0,0)
bright_green=(0,255,0)
bright_blue=(0,0,255)
display_width=800
display_height=600
#dram display
gamedisplays=pygame.display.set_mode((display_width,display_height))
#get time
clock=pygame.time.Clock()
#all the image load
pygame.display.set_caption("car game")
carimg=pygame.image.load('car1.jpg')
backgroundpic=pygame.image.load("grass.jpg")
yellow_strip=pygame.image.load("yellow_strip.jpg")
strip=pygame.image.load("strip.jpg")
intro_background=pygame.image.load("background.jpg")
instruction_background=pygame.image.load("background2.jpg")
#car width
car_width=56
pause=False
def intro_loop():
    intro=True
    while intro:
        for event in pygame.event.get():
            if event.type==pygame.QUIT:
                pygame.quit()
                quit()
                sys.exit()
        gamedisplays.blit(intro_background,(0,0))
        largetext=pygame.font.Font('freesansbold.ttf',115)
        TextSurf,TextRect=text_objects("CAR GAME",largetext)
        TextRect.center=(400,100)
        gamedisplays.blit(TextSurf,TextRect)
        button("START",150,520,100,50,green,bright_green,"play")
        button("QUIT",550,520,100,50,red,bright_red,"quit")
        button("INSTRUCTION",300,520,200,50,blue,bright_blue,"intro")
        pygame.display.update()
        clock.tick(50)
def button(msg,x,y,w,h,ic,ac,action=None):
    mouse=pygame.mouse.get_pos()
    click=pygame.mouse.get_pressed()
    if x+w>mouse[0]>x and y+h>mouse[1]>y:
        pygame.draw.rect(gamedisplays,ac,(x,y,w,h))
        if click[0]==1 and action!=None:
            if action=="play":
                countdown()
            elif action=="quit":
                pygame.quit()
                quit()
                sys.exit()
            elif action=="intro":
                introduction()
            elif action=="menu":
                intro_loop()
            elif action=="pause":
                paused()
            elif action=="unpause":
                unpaused()



    else:
        pygame.draw.rect(gamedisplays,ic,(x,y,w,h))
    smalltext=pygame.font.Font("freesansbold.ttf",20)
    textsurf,textrect=text_objects(msg,smalltext)
    textrect.center=((x+(w/2)),(y+(h/2)))
    gamedisplays.blit(textsurf,textrect)
def introduction():
    introduction=True
    while introduction:
        for event in pygame.event.get():
            if event.type==pygame.QUIT:
                pygame.quit()
                quit()
                sys.exit()
        gamedisplays.blit(instruction_background,(0,0))
        largetext=pygame.font.Font('freesansbold.ttf',80)
        smalltext=pygame.font.Font('freesansbold.ttf',20)
        mediumtext=pygame.font.Font('freesansbold.ttf',40)
        textSurf,textRect=text_objects("This is a car game in which you need to cross the coming cars",smalltext)
        textRect.center=((350),(200))
        TextSurf,TextRect=text_objects("INSTRUCTION",largetext)
        TextRect.center=((400),(100))
        gamedisplays.blit(TextSurf,TextRect)
        gamedisplays.blit(textSurf,textRect)
        stextSurf,stextRect=text_objects("ARROW LEFT : LEFT TURN",smalltext)
        stextRect.center=((150),(400))
        hTextSurf,hTextRect=text_objects("ARROW RIGHT : RIGHT TURN" ,smalltext)
        hTextRect.center=((150),(450))
        atextSurf,atextRect=text_objects("A : ACCELERATOR",smalltext)
        atextRect.center=((150),(500))
        rtextSurf,rtextRect=text_objects("B : BRAKE ",smalltext)
        rtextRect.center=((150),(550))
        ptextSurf,ptextRect=text_objects("P : PAUSE  ",smalltext)
        ptextRect.center=((150),(350))
        sTextSurf,sTextRect=text_objects("CONTROLS",mediumtext)
        sTextRect.center=((350),(300))
        gamedisplays.blit(sTextSurf,sTextRect)
        gamedisplays.blit(stextSurf,stextRect)
        gamedisplays.blit(hTextSurf,hTextRect)
        gamedisplays.blit(atextSurf,atextRect)
        gamedisplays.blit(rtextSurf,rtextRect)
        gamedisplays.blit(ptextSurf,ptextRect)
        button("BACK",600,450,100,50,blue,bright_blue,"menu")
        pygame.display.update()
        clock.tick(30)
def paused():
    global pause
    while pause:
            for event in pygame.event.get():
                if event.type==pygame.QUIT:
                    pygame.quit()
                    quit()
                    sys.exit()
            gamedisplays.blit(instruction_background,(0,0))
            largetext=pygame.font.Font('freesansbold.ttf',115)
            TextSurf,TextRect=text_objects("PAUSED",largetext)
            TextRect.center=((display_width/2),(display_height/2))
            gamedisplays.blit(TextSurf,TextRect)
            button("CONTINUE",150,450,150,50,green,bright_green,"unpause")
            button("RESTART",350,450,150,50,blue,bright_blue,"play")
            button("MAIN MENU",550,450,200,50,red,bright_red,"menu")
            pygame.display.update()
            clock.tick(30)
def unpaused():
    global pause
    pause=False
def countdown_background():
    font=pygame.font.SysFont(None,25)
    x=(display_width*0.45)
    y=(display_height*0.8)
    gamedisplays.blit(backgroundpic,(0,0))
    gamedisplays.blit(backgroundpic,(0,200))
    gamedisplays.blit(backgroundpic,(0,400))
    gamedisplays.blit(backgroundpic,(700,0))
    gamedisplays.blit(backgroundpic,(700,200))
    gamedisplays.blit(backgroundpic,(700,400))
    gamedisplays.blit(yellow_strip,(400,100))
    gamedisplays.blit(yellow_strip,(400,200))
    gamedisplays.blit(yellow_strip,(400,300))
    gamedisplays.blit(yellow_strip,(400,400))
    gamedisplays.blit(yellow_strip,(400,100))
    gamedisplays.blit(yellow_strip,(400,500))
    gamedisplays.blit(yellow_strip,(400,0))
    gamedisplays.blit(yellow_strip,(400,600))
    gamedisplays.blit(strip,(120,200))
    gamedisplays.blit(strip,(120,0))
    gamedisplays.blit(strip,(120,100))
    gamedisplays.blit(strip,(680,100))
    gamedisplays.blit(strip,(680,0))
    gamedisplays.blit(strip,(680,200))
    gamedisplays.blit(carimg,(x,y))
    text=font.render("DODGED: 0",True, black)
    score=font.render("SCORE: 0",True,red)
    gamedisplays.blit(text,(0,50))
    gamedisplays.blit(score,(0,30))
    button("PAUSE",650,0,150,50,blue,bright_blue,"pause")
def countdown():
    countdown=True

    while countdown:
            for event in pygame.event.get():
                if event.type==pygame.QUIT:
                    pygame.quit()
                    quit()
                    sys.exit()
            gamedisplays.fill(gray)
            countdown_background()
            largetext=pygame.font.Font('freesansbold.ttf',115)
            TextSurf,TextRect=text_objects("3",largetext)
            TextRect.center=((display_width/2),(display_height/2))
            gamedisplays.blit(TextSurf,TextRect)
            pygame.display.update()
            clock.tick(1)
            gamedisplays.fill(gray)
            countdown_background()
            largetext=pygame.font.Font('freesansbold.ttf',115)
            TextSurf,TextRect=text_objects("2",largetext)
            TextRect.center=((display_width/2),(display_height/2))
            gamedisplays.blit(TextSurf,TextRect)
            pygame.display.update()
            clock.tick(1)
            gamedisplays.fill(gray)
            countdown_background()
            largetext=pygame.font.Font('freesansbold.ttf',115)
            TextSurf,TextRect=text_objects("1",largetext)
            TextRect.center=((display_width/2),(display_height/2))
            gamedisplays.blit(TextSurf,TextRect)
            pygame.display.update()
            clock.tick(1)
            gamedisplays.fill(gray)
            countdown_background()
            largetext=pygame.font.Font('freesansbold.ttf',115)
            TextSurf,TextRect=text_objects("GO!!!",largetext)
            TextRect.center=((display_width/2),(display_height/2))
            gamedisplays.blit(TextSurf,TextRect)
            pygame.display.update()
            clock.tick(1)
            game_loop()
def obstacle(obs_startx,obs_starty,obs):
    if obs==0:
        obs_pic=pygame.image.load("car1.jpg")
    elif obs==1:
        obs_pic=pygame.image.load("car2.jpg")
    elif obs==2:
        obs_pic=pygame.image.load("car2.jpg")
    elif obs==3:
        obs_pic=pygame.image.load("car4.jpg")
    elif obs==4:
        obs_pic=pygame.image.load("car5.jpg")
    elif obs==5:
        obs_pic=pygame.image.load("car6.jpg")
    elif obs==6:
        obs_pic=pygame.image.load("car7.jpg")
    gamedisplays.blit(obs_pic,(obs_startx,obs_starty))
def score_system(passed,score):
    font=pygame.font.SysFont(None,25)
    text=font.render("Passed"+str(passed),True,black)
    score=font.render("Score"+str(score),True,red)
    gamedisplays.blit(text,(0,50))
    gamedisplays.blit(score,(0,30))
def text_objects(text,font):
    textsurface=font.render(text,True,black)
    return textsurface,textsurface.get_rect()
def message_display(text):
    largetext=pygame.font.Font("freesansbold.ttf",80)
    textsurf,textrect=text_objects(text,largetext)
    textrect.center=((display_width/2),(display_height/2))
    gamedisplays.blit(textsurf,textrect)
    pygame.display.update()
    time.sleep(3)
    game_loop()
def crash():
    message_display("YOU CRASHED")


def background():
    gamedisplays.blit(backgroundpic,(0,0))
    gamedisplays.blit(backgroundpic,(0,200))
    gamedisplays.blit(backgroundpic,(0,400))
    gamedisplays.blit(backgroundpic,(700,0))
    gamedisplays.blit(backgroundpic,(700,200))
    gamedisplays.blit(backgroundpic,(700,400))
    gamedisplays.blit(yellow_strip,(400,0))
    gamedisplays.blit(yellow_strip,(400,100))
    gamedisplays.blit(yellow_strip,(400,200))
    gamedisplays.blit(yellow_strip,(400,300))
    gamedisplays.blit(yellow_strip,(400,400))
    gamedisplays.blit(yellow_strip,(400,500))
    gamedisplays.blit(strip,(120,0))
    gamedisplays.blit(strip,(120,100))
    gamedisplays.blit(strip,(120,200))
    gamedisplays.blit(strip,(680,0))
    gamedisplays.blit(strip,(680,100))
    gamedisplays.blit(strip,(680,200))
def car(x,y):
    gamedisplays.blit(carimg,(x,y))
def game_loop():
    global pause
    x=(display_width*0.45)
    y=(display_height*0.8)
    x_change=0
    obstacle_speed=9
    obs=0
    y_change=0
    obs_startx=random.randrange(200,(display_width-200))
    obs_starty=-750
    obs_width=56
    obs_height=125
    passed=0
```

```
level=0
score=0
y2=7
fps=120
runing=False
while not  runing:
    for event in pygame.event.get():
        if event.type==pygame.QUIT:
            pygame.quit()
            quit()
        if event.type==pygame.KEYDOWN:
            if event.key==pygame.K_LEFT:
                x_change=-5
            if event.key==pygame.K_RIGHT:
                x_change=5
            if event.key==pygame.K_a:
                obstacle_speed+=2
            if event.key==pygame.K_b:
                obstacle_speed-=2
        if event.type==pygame.KEYUP:
            if event.key==pygame.K_LEFT or event.key==pygame.K_RIGHT:
                x_change=0
    x+=x_change
    pause=True
    gamedisplays.fill(gray)
    rel_y=y2%backgroundpic.get_rect().width
    gamedisplays.blit(backgroundpic,(0,rel_y-backgroundpic.get_rect().width))
    gamedisplays.blit(backgroundpic,(700,rel_y-backgroundpic.get_rect().width))
    if rel_y<800:
        gamedisplays.blit(backgroundpic,(0,rel_y))
        gamedisplays.blit(backgroundpic,(700,rel_y))
        gamedisplays.blit(yellow_strip,(400,rel_y))
        gamedisplays.blit(yellow_strip,(400,rel_y+100))
        gamedisplays.blit(yellow_strip,(400,rel_y+200))
        gamedisplays.blit(yellow_strip,(400,rel_y+300))
        gamedisplays.blit(yellow_strip,(400,rel_y+400))
        gamedisplays.blit(yellow_strip,(400,rel_y+500))
        gamedisplays.blit(yellow_strip,(400,rel_y-100))
        gamedisplays.blit(strip,(120,rel_y-200))
        gamedisplays.blit(strip,(120,rel_y+20))
        gamedisplays.blit(strip,(120,rel_y+30))
        gamedisplays.blit(strip,(680,rel_y-100))
        gamedisplays.blit(strip,(680,rel_y+20))
        gamedisplays.blit(strip,(680,rel_y+30))
    y2+=obstacle_speed
    obs_starty-=(obstacle_speed/4)
    obstacle(obs_startx,obs_starty,obs)
    obs_starty+=obstacle_speed
    car(x,y)
    score_system(passed,score)
    if x>690-car_width or x<110:
        crash()
    if x>display_width-(car_width+110) or x<110:
        crash()
    if obs_starty>display_height:
        obs_starty=0-obs_height
        obs_startx=random.randrange(170,(display_width-170))
        obs=random.randrange(0,7)
        passed=passed+1
        score=passed*10
        if int(passed)%10==0:
            level=level+1
            obstacle_speed+2
            largetext=pygame.font.Font("freesansbold.ttf",80)
            textsurf,textrect=text_objects("LEVEL"+str(level),largetext)
            textrect.center=((display_width/2),(display_height/2))
            gamedisplays.blit(textsurf,textrect)
            pygame.display.update()
            time.sleep(3)
        if y<obs_starty+obs_height:
          if x > obs_startx and x < obs_startx + obs_width or x+car_width > obs_startx and x+car_width < obs_startx+obs_width:
            crash()
        button("Pause",650,0,150,50,blue,bright_blue,"pause")
        pygame.display.update()
        clock.tick(60)
    intro_loop()
    game_loop()
    pygame.quit()
    sys.quit()
```