

```
import pygame

import levels
from levels import gameLevels, flag, topGrass, sideGrassRight, sideGrassLeft, grassCornerRight,
grassCornerLeft

#initialise pygame
pygame.init()

#create screen
width, height = 1280, 720
screen = pygame.display.set_mode((width, height))
clock = pygame.time.Clock()

#game settings
fps = 120
grav = 9.8
speed = 3
jumpSpeed = 7
jumpTime = 1.35

#variables
global allowJump
jumpKeep = -1
allowJump = False

#import images
backG = pygame.image.load("assets/images/background.png").convert()
char = pygame.image.load("assets/images/char.png").convert()
lastLevel = pygame.image.load("assets/images/lastLevel.png").convert_alpha()

#add grass to levels
gameLevels = levels.addGrass(gameLevels)

#level (columns = 20, rows = 12) ([0] and [1] of each list is the range in x for the block and [2]
and [3] is the same for y)
global levelList, currentLevel, spawn
currentLevel = 0
levelList = gameLevels[currentLevel]
spawn = [levelList[0][5] * 64, levelList[0][6] * 64]

#platform jumpable blocks
platforms = []

#blocks with no collision
noCol = [flag, topGrass, sideGrassLeft, sideGrassRight, grassCornerRight, grassCornerLeft]

class Player():
    def __init__(self):
        self.pos = spawn
        self.skin = char
        self.fallCount = 0
        self.force = jumpSpeed
        self.falling = False
    def move(self, newPos): #moves the player as long as it isnt out of bounds
        if self.pos[0] + newPos[0] < 1216 and self.pos[0] + newPos[0] >= 0:
            self.pos = [self.pos[0] + newPos[0], self.pos[1] + newPos[1]]
    def grav(self): #calculates gravity and makes character fall unless colliding.
        gridX, gridY = ((self.pos[0] // 64)), ((self.pos[1] // 64) + 1)
```

```

for i in range(len(levelList)):
    if (not (gridX <= levelList[i][1] and gridY == levelList[i][2])) or (not (gridX + 1 >=
levelList[i][0] and gridY == levelList[i][2])) or levelList[i][4] in noCol:
        self.falling = True
    else:
        self.falling = False
        self.fallCount = 0
        self.pos[1] = self.pos[1] // 64 * 64
        break
if self.falling:
    self.move([0, grav * (self.fallCount / 60)])
    self.fallCount += 1
def draw(self): #renders player
    screen.blit(self.skin, ((self.pos[0]), (self.pos[1])))
def jump(self): #adds upwards force to make player jump
    global allowJump
    if self.falling == False and self.force < jumpSpeed:
        allowJump = False
        self.force = 0
    self.move([0, -self.force])
    self.force = self.force - (1 / 60)

```

```
character = Player() #instance of Player class
```

```

def drawStuff(): #renders the level based on the levelList for the particular level
    for i in range((width // 64) + 1):
        for j in range((height // 64) + 1):
            for k in range(len(levelList)):
                if i >= levelList[k][0] and i <= levelList[k][1] and j >= levelList[k][2] and j <=
levelList[k][3]:
                    screen.blit(levelList[k][4], ((i*64), (j*64)))
def drawBackG():
    for i in range((width // 64) + 1):
        for j in range((height // 64) + 1):
            screen.blit(backG, ((i*64), (j*64)))
def drawScreen(): #graphics main loop
    drawBackG()
    character.draw()
    drawStuff()
    character.grav()
def jump():
    global allowJump
    if not character.falling:
        allowJump = True
        character.force = jumpSpeed
def jumpLoop(): #checks if character can jump before allowing it
    global allowJump
    posX, posY = character.pos[0], character.pos[1]
    for i in range(len(levelList)): #collision checks
        if posX // 64 >= levelList[i][0] and posX // 64 <= levelList[i][1] and (posY // 64) ==
levelList[i][3] and levelList[i][4] not in noCol and levelList[i][4] not in platforms:
            check1 = True
            break
    else:
        check1 = False

```

```
posX += 64
for i in range(len(levellist)):
    if posX // 64 >= levellist[i][0] and posX // 64 <= levellist[i][1] and (posY // 64) ==
levellist[i][3] and levellist[i][4] not in noCol and levellist[i][4] not in platforms:
        check2 = True
        break
    else:
        check2 = False
if check1 or check2:
    allowJump = False
    character.force = 0
if allowJump:
    character.jump()

def moveLeft(): #left moving collision checks
posX, posY = character.pos[0] + -speed, character.pos[1] + 63
for i in range(len(levellist)):
    if (posX // 64 == levellist[i][1] and posY // 64 <= levellist[i][3] and posY // 64 >=
levellist[i][2]) and levellist[i][4] not in noCol:
        allowMove1 = False
        break
    else:
        allowMove1 = True
posX, posY = character.pos[0] + -speed, character.pos[1]
for i in range(len(levellist)):
    if (posX // 64 == levellist[i][1] and posY // 64 <= levellist[i][3] and posY // 64 >=
levellist[i][2]) and levellist[i][4] not in noCol:
        allowMove2 = False
        break
    else:
        allowMove2 = True
if allowMove1 and allowMove2:
    character.move([-speed, 0])

def moveRight(): #right moving collision checks
posX, posY = character.pos[0] + speed + 64, character.pos[1] + 63
for i in range(len(levellist)):
    if (posX // 64 == levellist[i][0] and posY // 64 <= levellist[i][3] and posY // 64 >=
levellist[i][2]) and levellist[i][4] not in noCol:
        allowMove1 = False
        break
    else:
        allowMove1 = True
posX, posY = character.pos[0] + speed + 64, character.pos[1]
for i in range(len(levellist)):
    if (posX // 64 == levellist[i][0] and posY // 64 <= levellist[i][3] and posY // 64 >=
levellist[i][2]) and levellist[i][4] not in noCol:
        allowMove2 = False
        break
    else:
        allowMove2 = True
if allowMove1 and allowMove2:
    character.move([speed, 0])

def detectKey(): #detects user inputs
keys = pygame.key.get_pressed()
if keys[pygame.K_a] or keys[pygame.K_LEFT]:
    moveLeft()
if keys[pygame.K_d] or keys[pygame.K_RIGHT]:
```

```
        moveRight()
    if keys[pygame.K_SPACE] or keys[pygame.K_UP]:
        jump()

def checkDead(): #checks if player fell
    if character.pos[1] >= 720:
        character.pos = spawn

def checkWin(): #checks if player reached the flag object in given level
    global levellist, currentlevel, spawn
    for i in range(len(levellist)):
        if levellist[i][4] == flag:
            gridX, gridY = ((character.pos[0] // 64)), ((character.pos[1] // 64))
            if (gridX == levellist[i][0] and gridY == levellist[i][2]) or (gridX + 1 == levellist[i]
[0] and gridY == levellist[i][2]):
                try:
                    currentlevel += 1
                    levellist = gameLevels[currentlevel]
                    spawn = [levellist[0][5] * 64, levellist[0][6] * 64]
                    character.__init__()
                except:
                    screen.blit(lastLevel, (0, 0))
                break

def main(): #main game loop
    global jumpKeep
    runGame = True
    while runGame:

        #fps limit
        clock.tick(fps)

        for event in pygame.event.get():
            if event.type == pygame.QUIT:
                runGame = False

        #check for death
        checkDead()

        #jump function
        jumpLoop()

        #keyboard detection
        detectKey()

        #draw items on screen
        drawScreen()

        #check for win
        checkWin()

        #refresh screen
        pygame.display.flip()

    pygame.quit()

if __name__ == "__main__":
    main()
```