```
 1 import math
 2 import random
 3
 4 import pygame
 5 from pygame import mixer
 6
 7 #Intialize the pygame
 8 pygame.init()
 9
10 #create the screen
11 screen = pygame.display.set_mode((800,600))
12
13 #Background
14 background = pygame.image.load('background.png')
15
16 #sound
17 mixer.music.load("background.wav")
18 mixer.music.play(-1)
19
20 #caption and icon
21 pygame.display.set_caption("space Invader")
22 icon = pygame.image.load('ufo.png')
23 pygame.display.set_icon(icon)
24
25 #player
26 playerimg = pygame.image.load('player.png')
27 playerX = 370
28 playerY = 480
29 playerX_change = 0
30
31 #Enemy
32 enemyImg = []
33 enemyX = []
34 enemyY = []
35 enemyX_change = []
36 enemyY_change = []
37 num_of_enemies = 6
38
39 for i in range(num_of_enemies):
40     enemyImg.append(pygame.image.load('enemy.png'))
41     enemyX.append(random.randint(0,736))
```

```
42      enemyY.append(random.randint(50,150))
43      enemyX_change.append(4)
44      enemyY_change.append(40)
45
46  #Bullet
47
48  #ready - You can't see the bullet on the screen
49  #Fire - The bullet is currently moving
50
51  bulletImg = pygame.image.load('bullet.png')
52  bulletX = 0
53  bulletY = 480
54  bulletX_change = 0
55  bulletY_change = 10
56  bullet_state = "ready"
57
58  #score
59
60  score_value = 0
61  font = pygame.font.Font('freesansbold.ttf',32)
62
63  textX = 10
64  textY = 10
65
66  #Game over
67  over_font = pygame.font.Font('greesansbold.ttf',64)
68
69
70  def show_score(x, y):
71      score = font.render("score : " + str(score_value
    ), true, (255, 255, 255))
72      screen.blit(score, (X, Y))
73
74
75  def game_over_text():
76      over_text = over_font.render("GAME OVER", True, (
    255, 255, 255))
77      screen.blit(over_text, (200, 250))
78
79
80  def player(x,y):
```

```
 81     screen.blit(playerImg, (x,y))
 82
 83
 84 def enemy(x, y, i):
 85     screen.blit(enemyImg[i], (x,y))
 86
 87
 88 def fire_bullet(x, y):
 89     global bullet_state
 90     bullet_state = "fire"
 91     screen.blit(bulletImg, (x + 16, y + 10))
 92
 93
 94 def iscollision(enemyX,enemyY,bulletX,bulletY):
 95     distance = math.sqrt(math.pow(enemyX - bulletX,
    2) + (math.pow(enemyY - bulletY , 2)))
 96     if distance < 27:
 97         return True
 98     else:
 99         return False
100
101
102 #Game Loop
103 running = True
104 while running:
105
106     #RGB = Red,Green,Blue
107     screen.fill((0, 0, 0))
108     #background Image
109     screen.blit(background, (0, 0))
110     for event in pygame.event.get():
111         if event.type == pygame.QUIT:
112             running = False
113
114         #if keystroke is pressed check whether its
    right or left
115         if event.type == pygame.KEYDOWN:
116             if event.key == pygame.K_LEFT:
117                playerX_change = -5
118             if event.key == pygame.K_RIGHT:
119                playerY_change = 5
```

```
120             if event.key == pygame.K_SPACE:
121                 if bullet_state is "ready":
122                     bulletsound = mixer.sound("laser.
    wav")
123                     bulletsound.play()
124                     #get the current x coordinate of
    the spaceship
125                     bulletX = playerX
126                     fire_bullet(bulletX, bulletY)
127 
128         if event.type == pygame.KEYUP:
129             if event.key == pygame.K_LEFT or event.
    key == pygame.K_RIGHT:
130                 playerX_change = 0
131     # 5 = 5 + - 0.1 -> 5 = 5 - 0.1
132     # 5 = 5 + 0.1
133 
134 
135     playerX += playerX_change
136     if playerX <= 0:
137         playerX = 0
138     elif playerX >=736:
139         playerX = 736
140 
141         # Enemy Movement
142     for i in range(num_of_enemies):
143 
144         #Game Over
145         if enemyY[i] > 440:
146             for j in range(num_of_enemies):
147                 enemyY[j] = 2000
148             game_over_text()
149             break
150 
151             enemyX[i] += enemyX_change[i]
152                 if enemyX[i] <= 0:
153                     enemyX_change[i] = 4
154                     enemyY[i] += enemyY_change[i]
155                 elif enemyX[i] >= 736:
156                     enemyX_change[i] = -4
157                     enemyY[i] += enemyY_change[i]
```

```
158
159         #Collision
160         collision = iscollision(enemyX[i], enemyY[i
    ], bulletX, bulletY)
161         if collision:
162             explosionsound = mixer.sound("explosion.
    wax")
163             explosionsound.play()
164             bulletY = 480
165             bullet_state = "ready"
166             score_value += 1
167             enemyX[i] = random.randint(0, 736)
168             enemyY[i] = random.randint(50, 150)
169
170         enemy(enemyX[i],enemyY[i], i)
171
172         # Bullet Movement
173     if bulletY <= 0:
174         bulletY = 480
175         bullet_state = "ready"
176
177     if bullet_state is "fire"
178        fire_bullet(bulletX, bulletY)
179        bulletY -= bulletY_change
180
181     player(playerX, playerY)
182     show_score(textX, textY)
183     pygame.display.update()
184
```