Common Display Functions

`pygame.display.set_mode((WIDTH, HEIGHT)) -> Surface`

Returns a `Surface` object representing the `screen` with given `WIDTH` and `HEIGHT`. Usually this is assigned to a global variable called `screen`.

`pygame.display.update()`

Updates the display.

Common Surface Methods

Assume a Surface object has been stored in the variable `surface`.

`surface.fill(color)`

`surface.get_at((x, y)) -> Color`

Returns a `Color` object representing the color of the pixel `at (x, y)`

`surface.set_at((x, y), color)`

Sets the color of the pixel at `(x, y)`

`surface.get_size() -> (width, height)`

`surface.get_width() -> width`

`surface.get_height() -> height`

Rect Methods and Properties

`pygame.Rect(left, top, width, height) -> Rect`

Assume a Rect object has been stored in the variable `rect`. The following are commonly used methods and attributes of the rect.

```
rect.copy() -> Rect
rect.move() -> Rect
rect.contains(rect) -> bool
rect.collidepoint((x, y)) -> bool
rect.colliderect(rect) -> bool
rect.collidelist(list) -> index

rect.x, rect.y
rect.top, rect.left, rect.bottom, rect.right
rect.topleft, rect.bottomleft, rect.topright, rect.bottomright
rect.centerx, rect.centery
rect.center
rect.size, rect.width, rect.height
```

Common Draw Functions

`pygame.draw.rect(surface, color, rect, width=0, border_radius=0)`
`surface` is a `Surface` object, often the global variable `screen`
`rect` must be a `pygame.Rect` object
`width` and `border_radius are` an *optional arguments*. `width=0` fills rect.

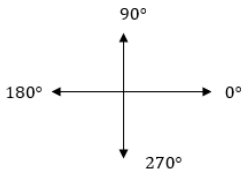
`pygame.draw.polygon(surface, color, points, width=0)`
`points` is a list of coordinates such as `[(x1, y1), (x2, y2), …]`

`pygame.draw.circle(surface, color, center, radius, width=0)`

`pygame.draw.ellipse(surface, color, rect, width=0)`
`rect` is a `Rect` object that bounds the ellipse shape

`pygame.draw.line(surface, color, start_pos, end_pos, width=1)`
`start_pos` and `end_pos` are tuples `(x, y)`.

`pygame.draw.arc(surface, color, start_angle, stop_angle)`
The arc is drawn in a counterclockwise direction from the `start_angle` to the `stop_angle`, angle measures in radians.



Common Mouse Functions

`pygame.mouse.get_pos() -> (x, y)` gets the mouse position

`pygame.mouse.get_rel() -> (dx, dy)` gets the amount of movement since last call.

`pygame.mouse.set_visible(bool)` `True` to make visible, `False` to hide

Common Key Functions and Codes

`pygame.key.get_pressed() -> [bools]`
Returns a list of all the keys with the value at a keycode's index `True` if the key is being pressed. (see keycode constants)

`pygame.key.set_repeat(delay)`
`delay` is the amount of time before a held down key triggers an additional key event.

Keycode Constants

`pygame.K_UP`	up arrow
`pygame.K_DOWN`	down arrow
`pygame.K_RIGHT`	right arrow
`pygame.K_LEFT`	left arrow
`pygame.K_SPACE`	space key
`pygame.K_RETURN`	return/enter key
`pygame.K_a`	a key
`pygame.K_b`	b key
`etc.`	

Common Events Functions and Codes

`pygame.event.get() -> [events]`

Returns a list of all the events that have occurred since the last call.
Commonly included in an event loop such as `for event in pygame.event.get():`

All event objects have a type attribute. Depending upon the type of the event, the object will have these additional attributes. This list includes some of the commonly used attributes.

Event Types	**Attributes**
`QUIT`	`none`
`KEYDOWN`	`key`
`KEYUP`	`key`
`MOUSEMOTION`	`pos, rel, buttons`
`MOUSEBUTTONUP`	`pos, button`
`MOUSEBUTTONDOWN`	`pos, button`
`JOYAXISMOTION`	`axis, value`
`JOYBUTTONUP`	`button`
`JOYBUTTONDOWN`	`button`

Sprite Class Requirements

Classes used to create Sprite objects must extend `pygame.sprite.Sprite`. For example,
`class MySprite(pygame.sprite.Sprite)`

Suppose `sprite` is an object made by a class extending `pygame.sprite.Sprite.` The following methods and attributes must be defined in the class.

`sprite.update()`

This method is called by the `group.update()` and should update the sprites position and properties.

`sprite.rect, sprite.image` are required attributes.

`sprite.rect` is used to position the sprite
`sprite.image` is used to draw the sprite to a surface at the location of its rect

Common Sprite Group Methods

`pygame.sprite.Group(sprite1, sprite2, …) -> Group`

Creates a sprite group containing all of the sprites, or empty is no arguments.

Suppose `group` is a `pygame.sprite.Group` object. The following are commonly used methods and attributes of the group.

`group.add(sprite1, sprite2, …)`
`group.remove(sprite1, sprite2, …)`
`group.update()`

calls `sprite.update()` on each sprite in the group.
Arguments can be passed to `group.update` and then will be passed to each sprite's update.

`group.draw(surface)`

Draws each sprite in the group on the `surface` (often `screen`) at the location of the sprites `rect` attribute.

`group.sprites() -> sprite_list`
`group.has(sprite) -> bool`

Basic Game Loop

The following game loop example assumes that the coder has written custom `update`, `draw`, `on_mouse_move(pos)`, `on_mouse_down(pos, button)`, `on_key_down(key)`, and `on_key_up(key)` functions.

```
def mainloop():
    running = True
    clock = pygame.time.Clock()
    while running:
            update()
            draw()
            for event in pygame.event.get():
                if event.type == pygame.QUIT:
                    running = False
                    pygame.quit()
                elif event.type == pygame.MOUSEMOTION:
                    on_mouse_move(event.pos)
                elif event.type == pygame.MOUSEBUTTONDOWN:
                    on_mouse_down(event.pos, event.button)
                elif event.type == pygame.KEYDOWN:
                    on_key_down(event.key)
                elif event.type == pygame.KEYUP:
                    on_key_up(event.key)
            clock.tick(FPS)
pygame.init()
mainloop()
```