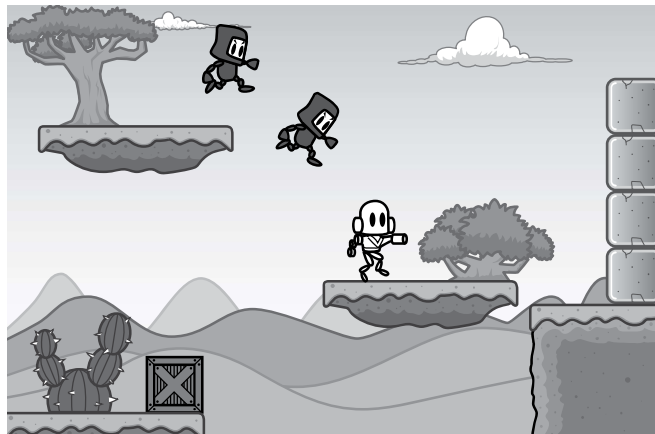


- 5 A computer game is being developed using object-oriented programming. The following image is a screenshot from the game.



There are scenery elements and animated elements. The player's character is one of the animated elements.

Each game element has the attributes:

Attribute	Description	Example value
PositionX	The x coordinate of the game element.	92
PositionY	The y coordinate of the game element.	106
Width	The width of the game element.	150
Height	The height of the game element.	200
ImageFilename	The filename of the image file for the game element.	GameElementFrame1.png

Each game element has a method, `GetDetails()` that returns a string containing all the element's attributes.

The player's character is one of a number of animated elements. All animated elements have the attributes:

Attribute	Description	Example value
AnimationFrames	An array of <code>GameElement</code>	
Direction	A string giving the direction the object is travelling in.	"Left"
Strength	A value for the strength that indicates the power of the object.	2000
Health	A value for the health that indicates the health of the object.	100

The player's character can either move left or right, or jump.

(a) Complete the following class diagram for the game.

You do not need to include any additional get or set methods.

GameElement
PositionX: INTEGER PositionY: INTEGER Width: INTEGER Height: INTEGER ImageFilename: STRING
Constructor() GetDetails()

AnimatedElement
AnimationFrames: ARRAY OF GameElement
Constructor() AdjustHealth() AdjustStrength() DisplayAnimation()

Scenery
CauseDamage: BOOLEAN DamagePoints: INTEGER
Constructor() GiveDamagePoints()

Player
.....

[3]

(b) Write **program code** to define the `GameElement` class.

Programming language

Program code

[6]

(c) The `Scenery()` class has two attributes, `CauseDamage` and `DamagePoints`.

If the attribute `CauseDamage` is `TRUE`, then the scenery element can cause damage.

The method `GiveDamagePoints()` checks whether the object can cause damage. If the object can cause damage, the method returns the integer value of the `DamagePoints` attribute.

Write **program code** for the `Scenery` class.

Programming language

Program code

[illegible]

[6]

- (d) A new scenery object, `GiftBox`, is to be created.
- (i) The attributes of `GiftBox` are as follows:

Attribute	Value
PositionX	150
PositionY	150
Width	50
Height	75
ImageFilename	"box.png"
CauseDamage	TRUE
DamagePoints	50

Write **program code** to create an instance of `GiftBox`.

Programming language

Program code

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.....[3]

- (ii) An additional method, `GetScenery()`, returns all the attributes of the `Scenery` class.

Write **program code** for the `GetScenery()` method.

You should use the `GetDetails()` method that the `Scenery` class inherits from the `GameElement` class.

Programming language

Program code

.....[3]