

Evidence Gathering Document for SQA Level 8 Professional Developer Award.

This document is designed for you to present your screenshots and diagrams relevant to the PDA and to also give a short description of what you are showing to clarify understanding for the assessor.

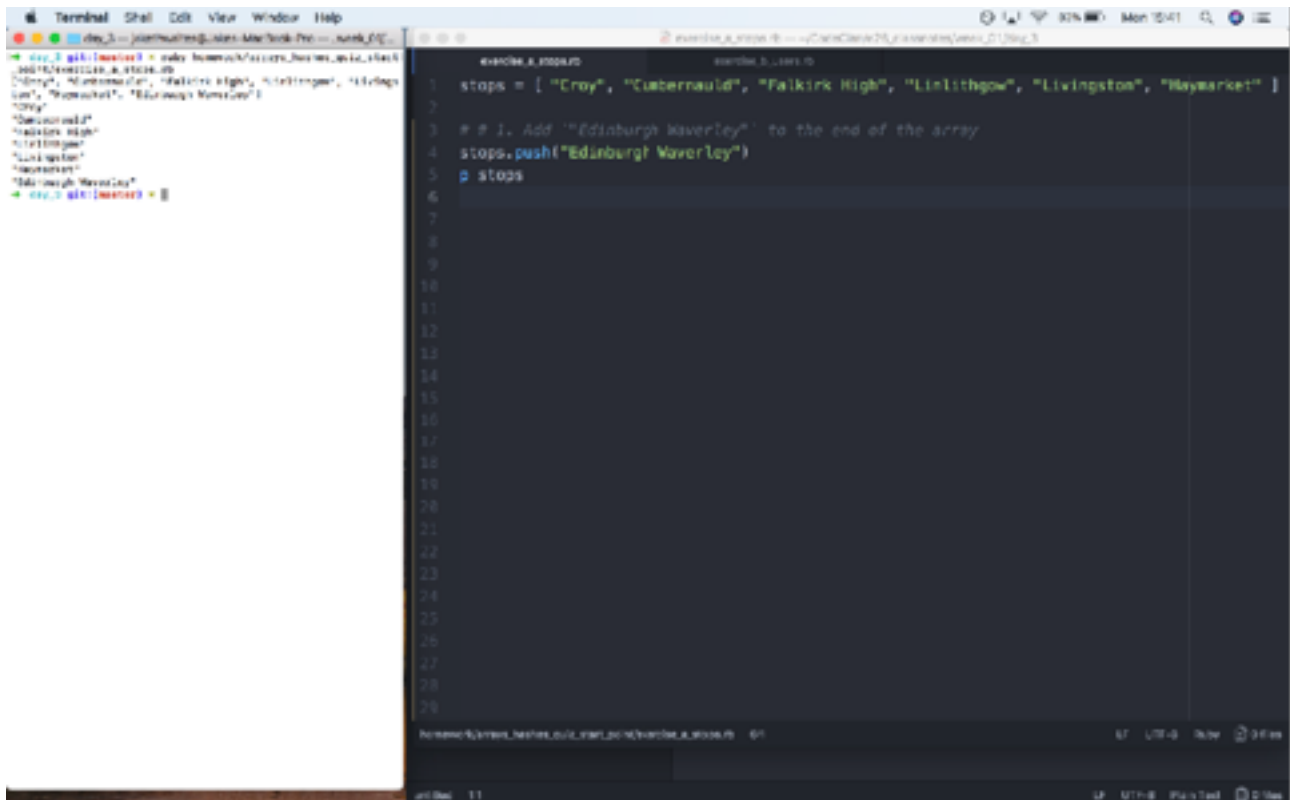
Please fill in each point with screenshot or diagram and description of what you are showing.

Each point requires details that cover each element of the Assessment Criteria, along with a brief description of the kind of things you should be showing.

Week 2

| Unit | Ref | Evidence |
|------|-------|--|
| I&T | I.T.5 | Demonstrate the use of an array in a program. Take screenshots of: *An array in a program *A function that uses the array *The result of the function running |
| | | Description: |

Paste Screenshot here



```

Terminal Shell Edit View Window Help
day_3 @ joanhuahua@ubuntu-MacBook-Pro:~/week_02$
python3_8_10/week_02.py
["Croy", "Cumbernauld", "Falkirk High", "Linlithgow", "Livingston", "Haymarket"]
"Edinburgh Waverley"
["Croy", "Cumbernauld", "Falkirk High", "Linlithgow", "Livingston", "Haymarket", "Edinburgh Waverley"]
day_3 @ joanhuahua@ubuntu-MacBook-Pro:~/week_02$

#ANOMALIA STOPS.py
#ANOMALIA STOPS.py
1 stops = ["Croy", "Cumbernauld", "Falkirk High", "Linlithgow", "Livingston", "Haymarket"]
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3 # 1. Add "Edinburgh Waverley" to the end of the array
4 stops.push("Edinburgh Waverley")
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```

Description here

Here I have added a new string to the array and printed out the resulting array.

| Unit | Ref | Evidence |
|------|-------|---|
| I&T | I.T.6 | Demonstrate the use of a hash in a program. Take screenshots of: *A hash in a program *A function that uses the hash *The result of the function running |
| | | Description: |

Paste Screenshot here

```
1 users = {
2   "Jonathan" => {
3     :twitter => "jonnyt",
4     :lottery_numbers => [6, 12, 49, 33, 45, 20],
5     :home_town => "Stirling",
6     :pets => [
7       {
8         :name => "fluffy",
9         :species => "cat"
10      },
11      {
12        :name => "fido",
13        :species => "dog"
14      },
15      {
16        :name => "spike",
17        :species => "dog"
18      }
19    ],
20  },
21  "Erik" => {
22    :twitter => "erikaf",
23    :home_town => "Durban",
24    :pets => [
25      {
26        :name => "monty",
27        :species => "snake"
28      }
29    ]
30  }
31 }
32
33 # 1. Get Jonathan's Twitter handle (i.e. the string "jonnyt")
34 p users["Jonathan"]["twitter"]
35 # 2. Get Erik's home town
36 p users["Erik"]["home_town"]
```

Description here

Here the users are stored within a hash, which have hashes within them to store further information. I

Week 3

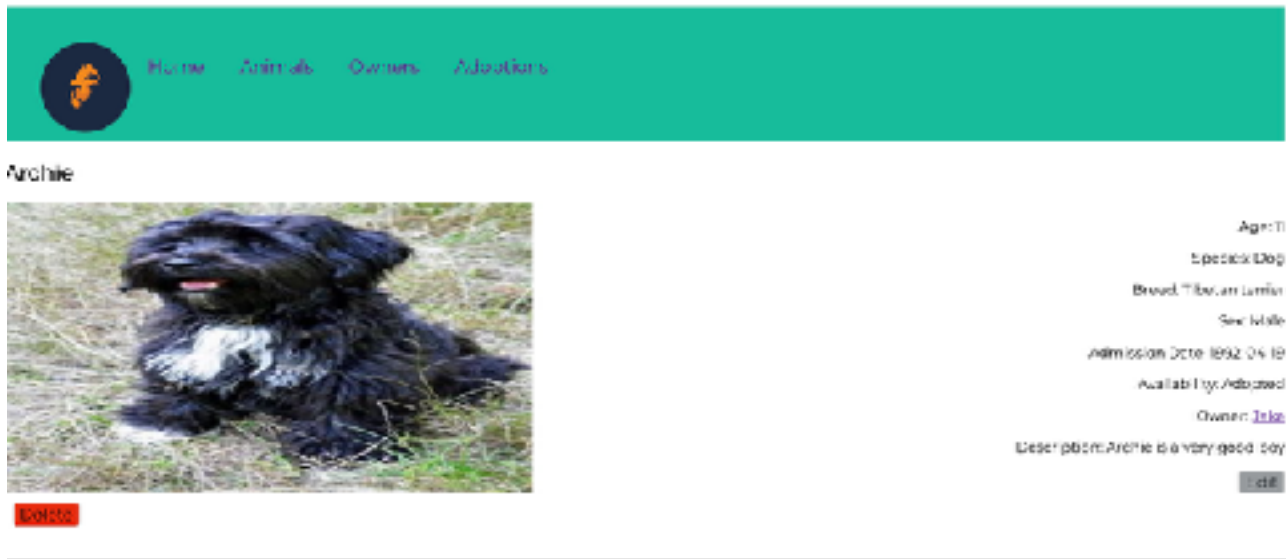
| Unit | Ref | Evidence |
|------|-------|--|
| I&T | I.T.3 | Demonstrate searching data in a program. Take screenshots of: *Function that searches data *The result of the function running |
| | | Description: |

Paste Screenshot here

```
def self.find_animal_by_id(id)
  sql = "SELECT * FROM animals WHERE id = $1"
  values = [id]
  result = SqlRunner.run(sql, values).first
  animal = Animal.new(result)
  return animal
end
```

```
get '/animals/:id' do
  @animal = Animal.find_animal_by_id(params['id'])
  erb("/animals/show")
end
```

This is a method from my Animal Shelter app which takes in an id as an argument and searches the database for an animal with that id. The second screenshot is where this method is called in my app.



This is a screenshot of the resulting page when the method is called in the app. When the user clicks on an animal they want to view, the method is called to search using the animal's ID. The animal with the requested ID is then shown on the page.

Description here

| Unit | Ref | Evidence |
|------|-------|---|
| I&T | I.T.4 | Demonstrate sorting data in a program. Take screenshots of: *Function that sorts data *The result of the function running |
| | | Description: |

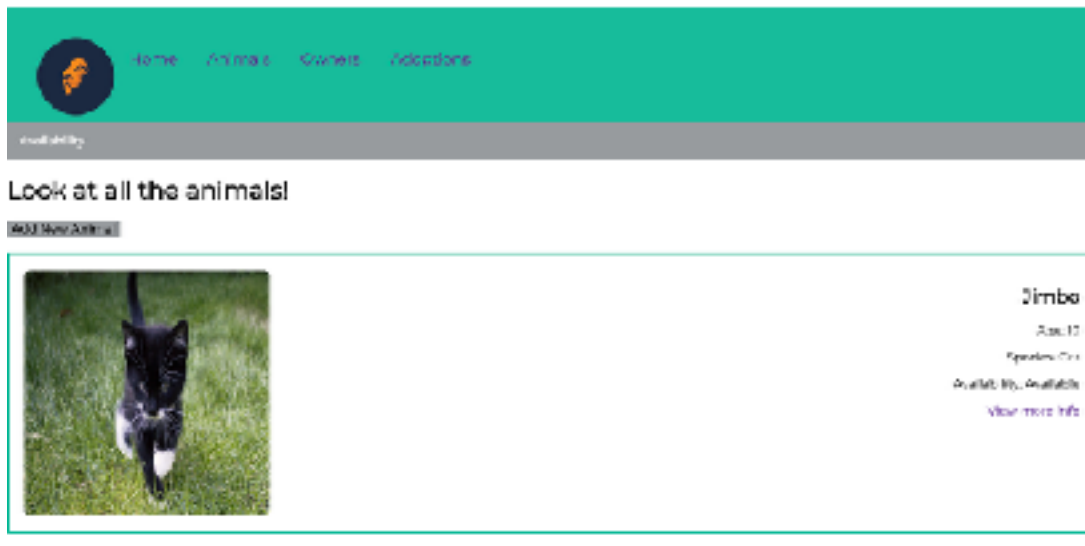
```
def self.find_by_availability(availability)
  sql = "SELECT * FROM animals WHERE availability = $1"
  values = [availability]
  result = SqlRunner.run(sql, values)
  return result.map { |animal| Animal.new(animal) }
end
```

Paste Screenshot here

This is a method defined in my animal shelter app to only return the animals if their availability status matches the one passed into the function as an argument.

```
get '/animals/available' do
  @animals = Animal.find_by_availability('Available')
  erb(:"animals/available")
end
```

This is where the method is called in the controller for the app. This will limit the number of animals shown, as only those who are available will show on the page.



This is the result of calling the method in the app. The method only returns the animals who have an availability of 'Available', and these are displayed on the screen.

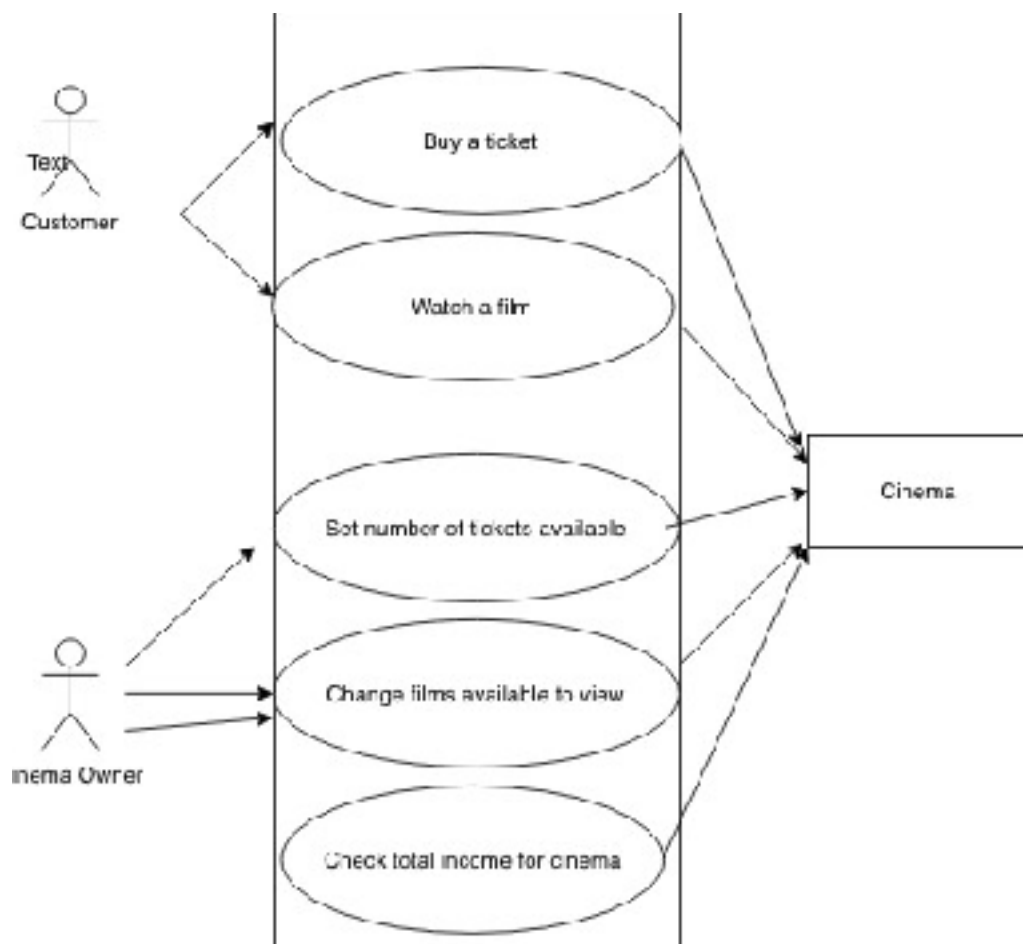
Week 5 and 6

| Unit | Ref | Evidence |
|------|-------|--------------------|
| A&D | A.D.1 | A Use Case Diagram |
| | | Description: |

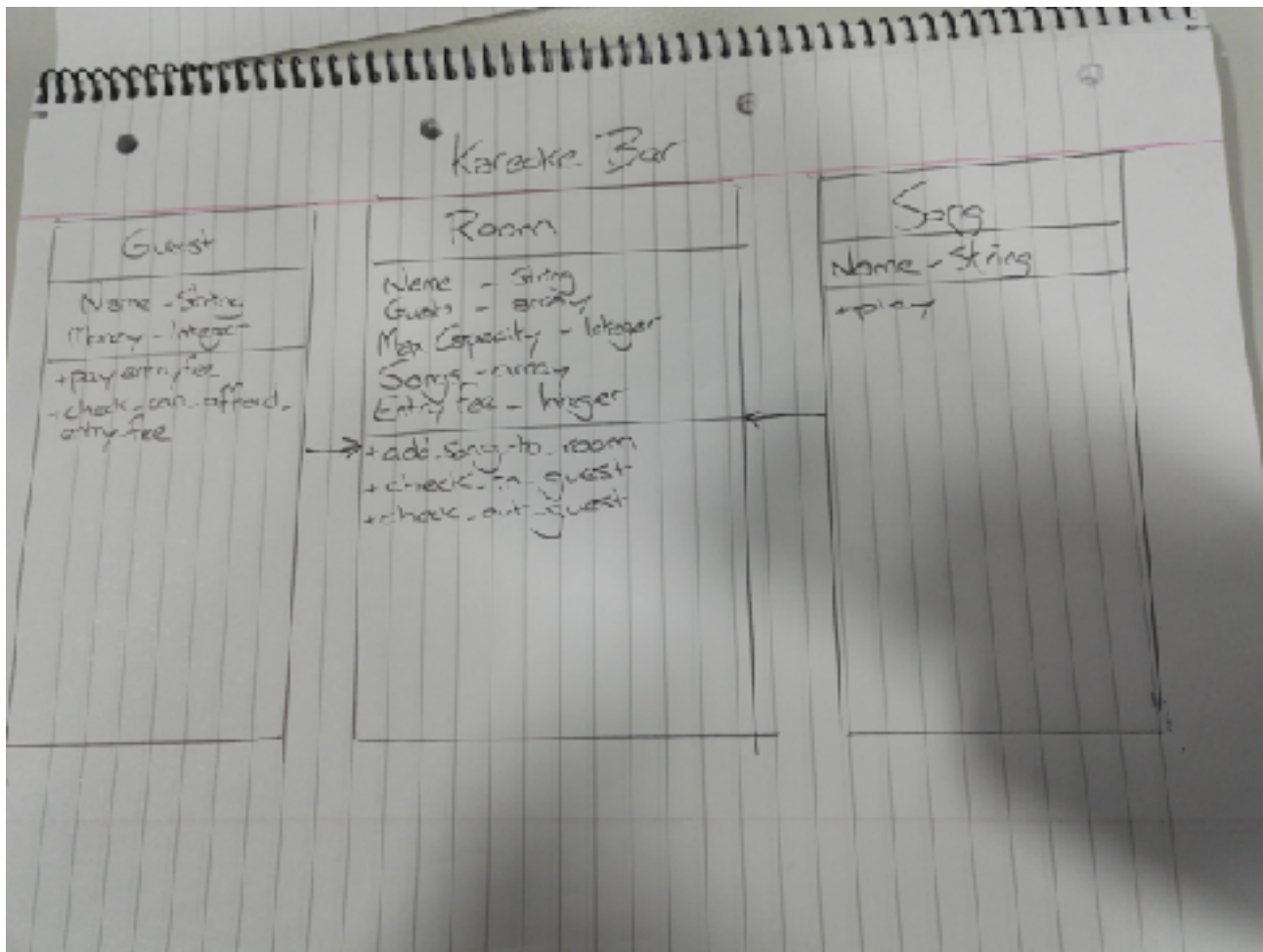
Paste Screenshot here

Description here

This is a use case diagram for a cinema. The cinema owner is able to change the tickets and films available, and check how much money the cinema has made. Customers can buy tickets and watch films. All these methods are kept separate; if the cinema owner wanted to buy a ticket, they would have to do so as a customer.



| Unit | Ref | Evidence |
|------|-------|-----------------|
| A&D | A.D.2 | A Class Diagram |
| | | Description: |

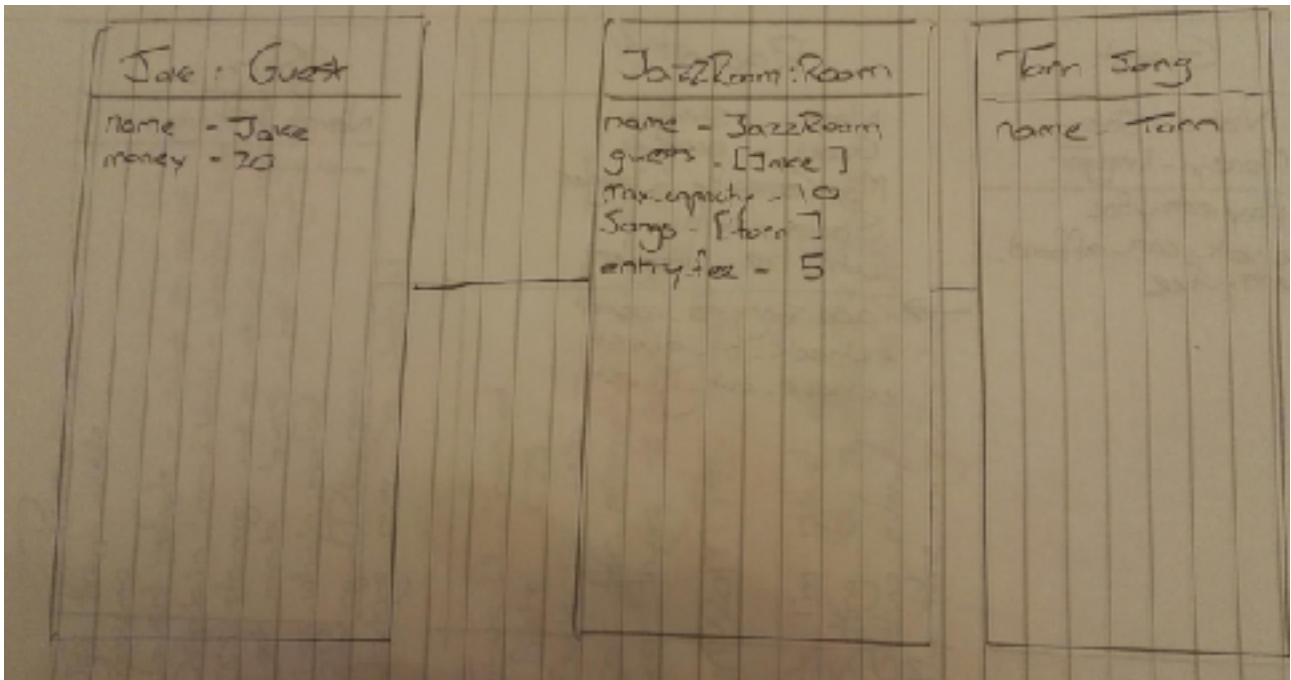


Description here

This is a class diagram for a karaoke bar. The room has a maximum number of guests, which are instances of the guest class, and are stored in an array. It can also hold several songs from the song class. The room has an instance variable of the entry fee, which the guest can pay using the pay_entry_fee method to go into the room.

| Unit | Ref | Evidence |
|------|-------|-------------------|
| A&D | A.D.3 | An Object Diagram |
| | | Description: |

Paste Screenshot here



Description here

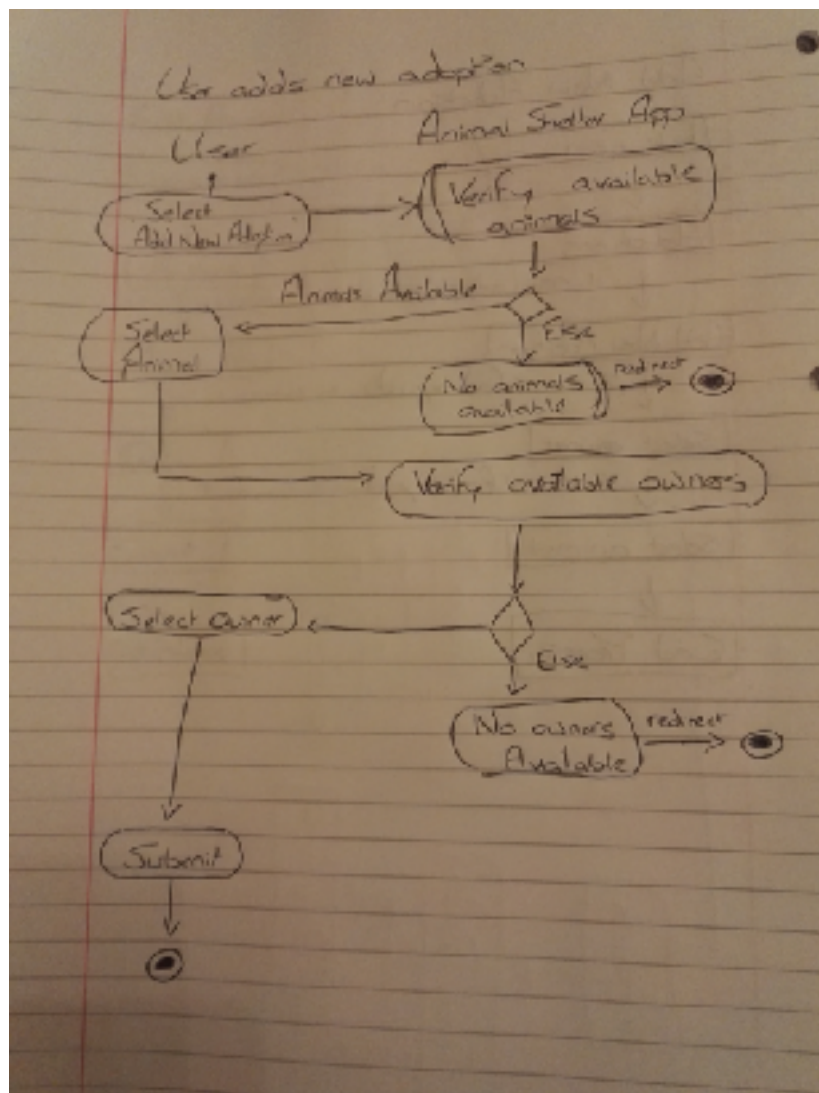
This object diagram shows examples of the guest, room and song classes for the karaoke bar.

Jake is a guest, who is in the JazzRoom, an instance of the Room class. This is held in the 'guests' array by the JazzRoom. 'Torn' is an instance of the Song class, and the name is held in the songs array by the JazzRoom.

| Unit | Ref | Evidence |
|------|-------|---------------------|
| A&D | A.D.4 | An Activity Diagram |
| | | Description: |

Paste Screenshot here

Description here



This is an activity diagram for add a new adoption for my animal shelter app. The diagrams shows how the app checks whether there are any available animals and owners, and either redirects the user, or prompts them to select one. Finally, the user can click submit to complete the process.

| Unit | Ref | Evidence |
|------|-------|--|
| A&D | A.D.6 | Produce an Implementations Constraints plan detailing the following factors: *Hardware and software platforms *Performance requirements *Persistent storage and transactions *Usability *Budgets *Time |
| | | Description: |

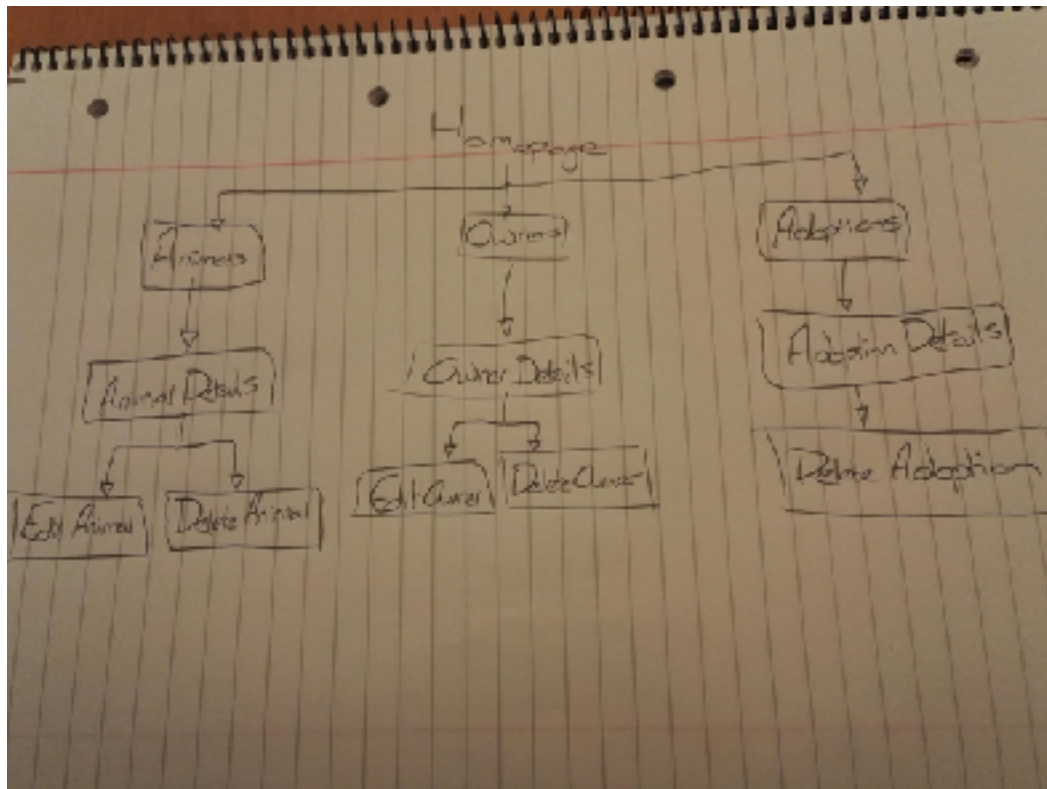
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| Constraint Category | Implementation Constraint | Solution |
|-------------------------------------|--|--|
| Hardware and Software platforms | The app could be difficult for users to load, as it would require them to run it through terminal every time they want to use it. This could be difficult for users without much experience using terminal | The app will be hosted online, so that users can access it through a website. |
| Performance Requirements | | |
| Persistent storage and transactions | The app would need to store newly updated animals and adoptions, otherwise users wouldn't | The app will have a database to store information entered into it, so that the user can view the information the next time they use the app. |
| Usability | The user could have difficulty navigating the app and using it effectively. | I will create a layout plan first to ensure that |
| Budgets | Employing software developers to develop the app can be expensive, and if we run out of budget, this can stop process on development as well as causing legal issues. | Ensuring that proper budgeting is done before the development phase, to ensure there are no financial difficulties for paying employees. |
| Time | Taking too long to complete the app and running into issues which take a long time to resolve can delay the release of the app, resulting in a loss of profit. | Planning beforehand can help identify potential difficulties later on in production, and ensuring that there will be at least an MVP in time for the due release date. |

Description here

| Unit | Ref | Evidence |
|------|-----|---------------|
| P | P.5 | User Site Map |
| | | Description: |

Paste Screenshot here



This is a user site map for my Animal Shelter app. The user can navigate from the homepage to view animals, owners or adoptions, and has various choices of what the do from there.

| Unit | Ref | Evidence |
|------|-----|----------------------|
| P | P.6 | 2 Wireframe Diagrams |
| | | Description: |

Paste Screenshot here

Animals Index

Home
Find's
Owners
Adoptions

Species

Cat

Dog

Availability

Adopted

Adopted

Name

Age

Species

Availability

Name

Age

Species

Availability

Animals/New

New Animal

Name

Age

Species

Gender

Sex

Or male or female

Adoption Date

Adoption Price

Availability

Description

Description here

These are two wireframe diagrams from my Ruby Animal Shelter project. They show the 'create new animal' page and the 'show all animals' page.

| Unit | Ref | Evidence |
|------|------|---|
| P | P.10 | Example of Pseudocode used for a method |
| | | Description: |

Paste Screenshot here

```
1  const reverseString = function(string) {
2    // Split each letter of the string to turn into an array
3    // Reverse the array
4    // Join each element of the array
5
6  };
```

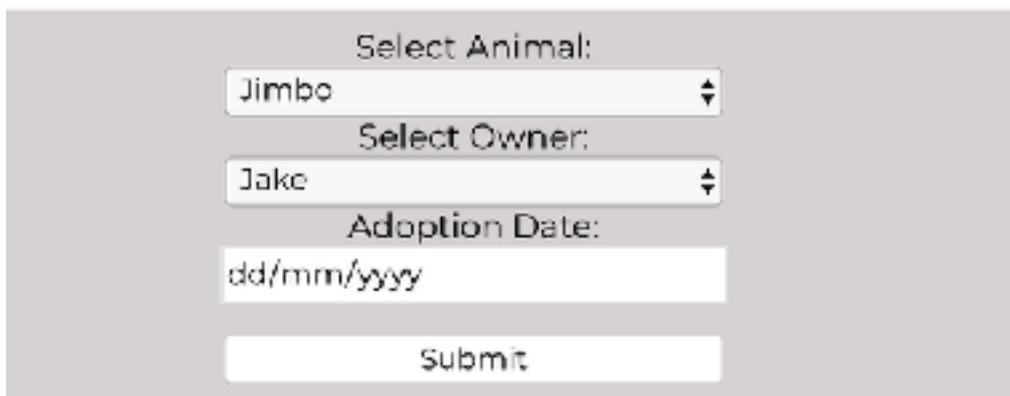
Description here

This is pseudocode written for a method which reverses each letter of a string in place. It explains each step required to reverse the string.

| Unit | Ref | Evidence |
|------|------|--|
| P | P.13 | Show user input being processed according to design requirements. Take a screenshot of: <ul style="list-style-type: none"> * The user inputting something into your program * The user input being saved or used in some way |
| | | Description: |

Paste Screenshot here

Create a new adoption



Select Animal:
Jimbo

Select Owner:
Jake

Adoption Date:
dd/mm/yyyy

Submit

This is the form for creating a new adoption on my animal shelter app. The user can select the animal, owner and adoption date as required.

Create a new adoption



Select Animal:
Jimbo

Select Owner:
Jake

Adoption Date:
01/01/2019

Submit

This is the completed form.

Information on a specific adoption

Owner: [Jake](#)

Animal: [Jimbo](#)

Adoption Date: 2019-01-01

[delete](#)

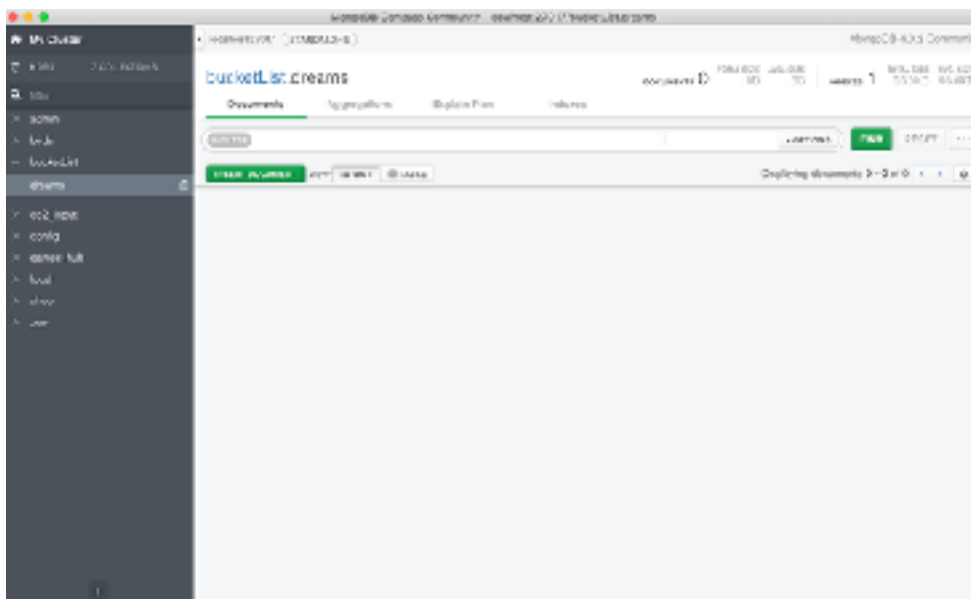
The app is now updated and the adoption can now be viewed on the list of all adoptions. This is the view of the information for the new adoption.

Description here

| Unit | Ref | Evidence |
|------|------|---|
| P | P.14 | Show an interaction with data persistence. Take a screenshot of: * Data being inputted into your program * Confirmation of the data being saved |
| | | Description: |

Paste Screenshot here

Description here



This is my javascript bucket list app. When the app is first loaded, there are no entries stored in the database, or shown on the website.

Jake's Dream Factory

Name:

Description:

Achieved By:

Make your dream come true

Bucket List Entries

"There are no buckets in heaven."

The user can then enter their entry and click to submit this to be saved.

Jake's Dream Factory

Name:

Description:

Achieved By:

Make your dream come true

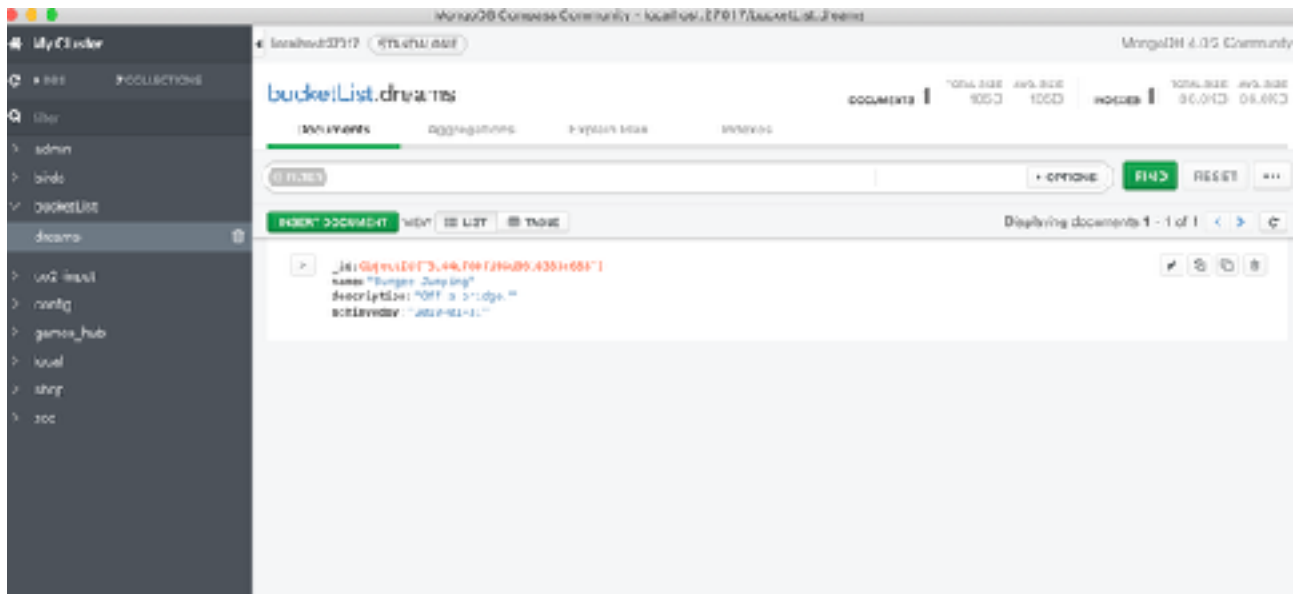
Bucket List Entries

"There are no buckets in heaven."

Name: Bungee Jumping
 Description: Off a bridge.
 Dream Deadline: 2019-01-31

Close bucket





The entry is then saved into the database, and will be displayed on the app.

| Unit | Ref | Evidence |
|------|------|--|
| P | P.15 | <p>Show the correct output of results and feedback to user. Take a screenshot of:</p> <ul style="list-style-type: none"> * The user requesting information or an action to be performed * The user request being processed correctly and demonstrated in the program |
| | | Description: |

Paste Screenshot here

chrome File Edit View History Localhost People Window Help

imprint Calculate CO2 Emissions

Home / imprint.co.uk / calculate-co2-emissions

IMPRINT

Transport

How many miles do you travel?

Car (per week):

Plane (per year):

Bus (per week):

Diet

Which of the following best describes your diet?

Household

Electricity

☐ Small House (1,000 kWh)

☐ Medium House (4,000 kWh)

☐ Large House (10,000 kWh)

Gas

☐ Small House (12,000 kWh)

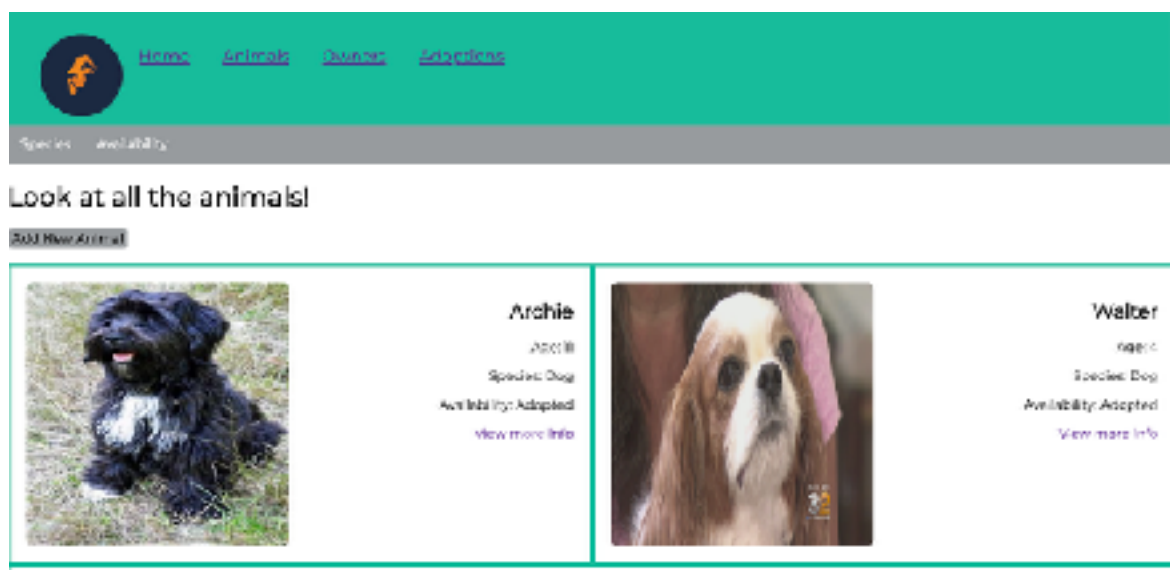
☐ Medium House (18,000 kWh)

☐ Large House (27,000 kWh)



This is an example from my CO2 Emissions calculator. The app starts out empty. By moving the sliders on the left hand side to update the user's average activities, the graph on the right hand side will automatically update to reflect the number inputted.

| Unit | Ref | Evidence |
|------|------|---|
| P | P.11 | Take a screenshot of one of your projects where you have worked alone and attach the Github link. |
| | | Description: |

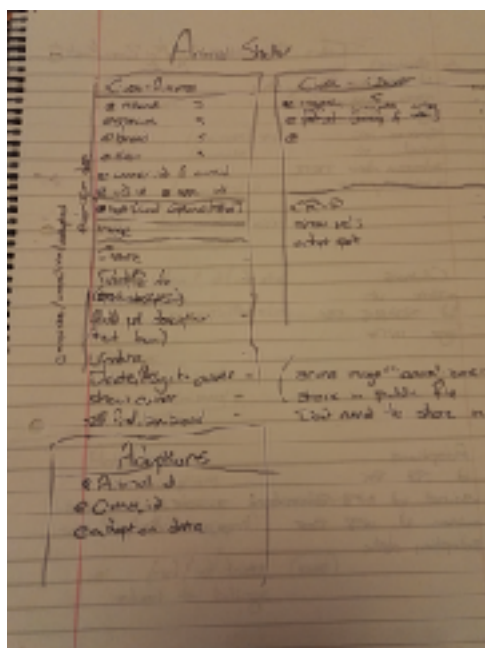


https://github.com/JakeThwaites/Ruby_Project_Animal_Shelter

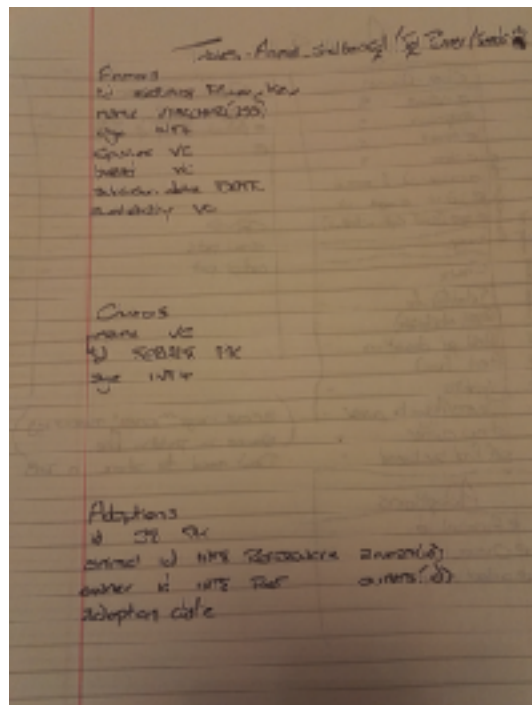
Description here

This was a solo project where I was tasked with building a management system for an animal shelter. The program allowed users to create a list of animals and owners and assign adoptions between them. They could then update these using CRUD methods.

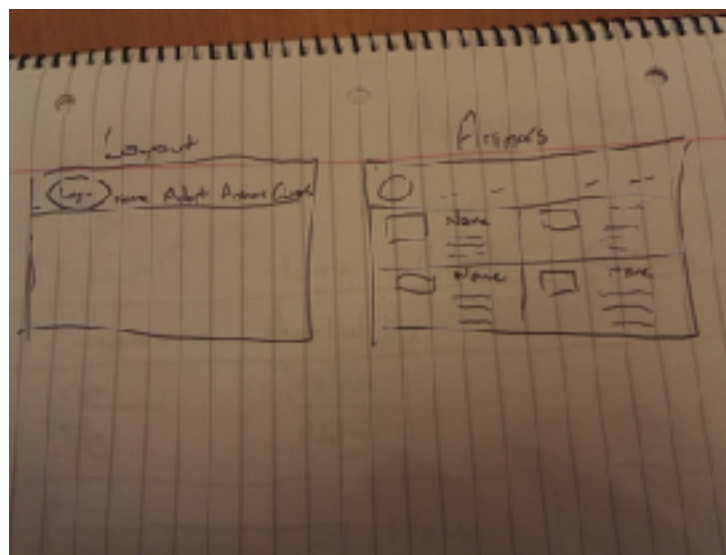
| Unit | Ref | Evidence |
|------|------|--|
| P | P.12 | Take screenshots or photos of your planning and the different stages of development to show changes. |
| | | Description: |



For my animal shelter app, I started by planning out the different classes I was going to use. I did this by creating class diagrams and writing the attributes I wanted the different classes to have.



After creating the classes, I then mapped out how the information would be stored in the database. For this, I wrote out a list of the tables to be stored in the database, and the data that they would hold.



Once I had created the back-end for the app, I created wireframe diagrams to plan how the information would like when displayed on the screen. Using these diagrams, I then created the HTML and CSS for the website.

Week 7

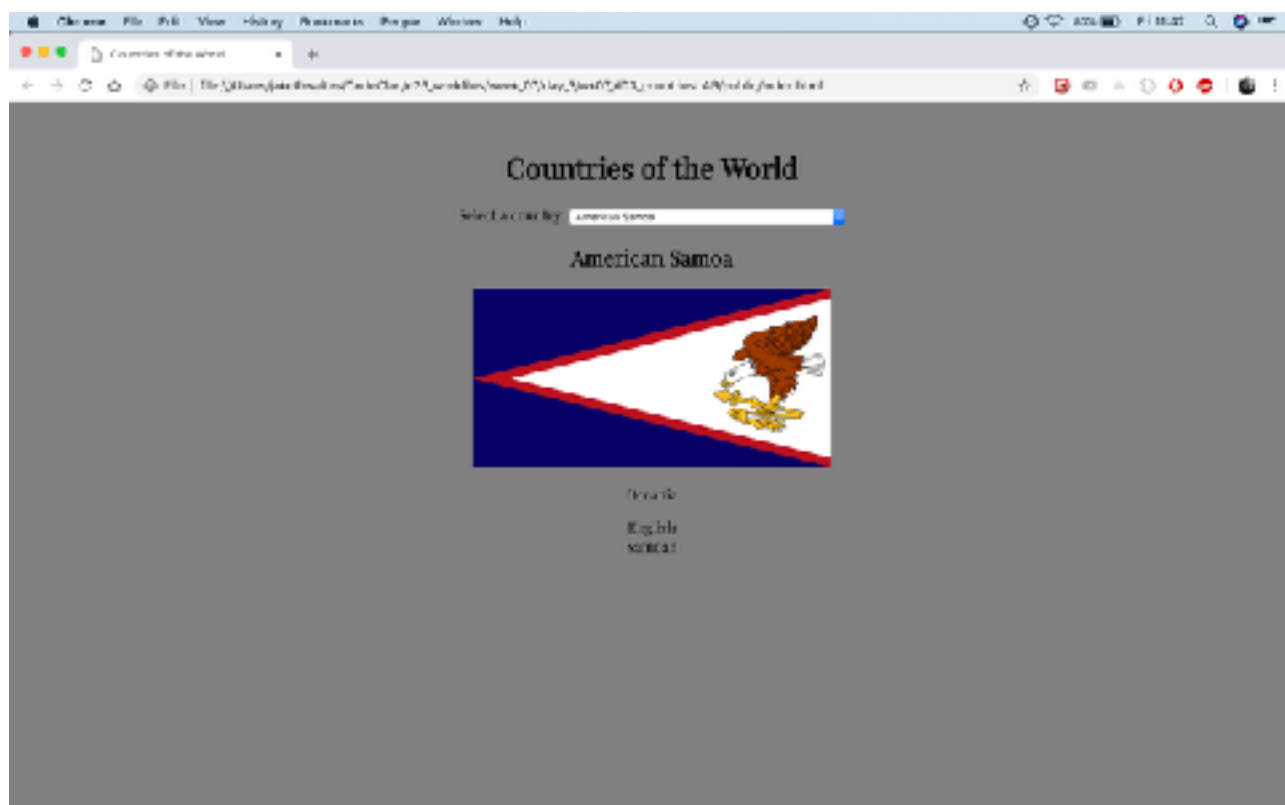
| Unit | Ref | Evidence |
|------|------|--|
| P | P.16 | Show an API being used within your program. Take a screenshot of: <ul style="list-style-type: none"> * The code that uses or implements the API * The API being used by the program whilst running |
| | | Description: |

Paste Screenshot here

```

18 Countries.prototype.getData = function () {
19   const requestHelper = new RequestHelper('https://restcountries.eu/rest/v2/all');
20   requestHelper.get((data) => {
21     this.countries = data;
22     PubSub.publish('Countries:countries-loaded', this.countries);
23   });
24 };

```



Description here

This is an API being used to get information on countries of the world. The first screenshot shows the use of RequestHelper to access an API from a link. It stores the data using requestHelper.get and saves it to this.countries. The second screenshot shows the app being used. The user can click on a country from the dropdown and view information for that country from the API.

| Unit | Ref | Evidence |
|------|------|---|
| P | P.18 | Demonstrate testing in your program. Take screenshots of: <ul style="list-style-type: none">* Example of test code* The test code failing to pass* Example of the test code once errors have been corrected* The test code passing |
| | | Description: |

Paste Screenshot here

```
@Test
public void canAddInstrument(){
    assertEquals( expected: 0, musicShop.getInstruments().size());
    musicShop.addInstrument(guitar);
    assertEquals( expected: 1, musicShop.getInstruments().size());
}
```

This is a test written in my Java music shop project. The test checks to see if the shop can add an instrument to its list of instruments. If the method works, the number of instruments in the shop should increase by 1.

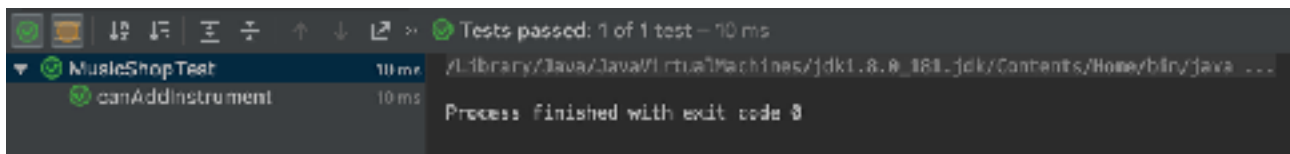
```
Error:(42, 18) java: cannot find symbol
    symbol:   method addInstrument(Instrument)
    location: variable musicShop of type MusicShop
```

Initially, the test returns an error, as the method hasn't yet been defined.

```
java.lang.AssertionError:
Expected :1
Actual   :0
<Click to see difference>
```

After creating the method in the MusicShop class, the test now runs, but doesn't update the list of instruments.

```
public void addInstrument(Instrument instrument) {
    instruments.add(instrument);
}
```



After updating the method as shown above, it now successfully updates the list of the instruments, and the test will pass.

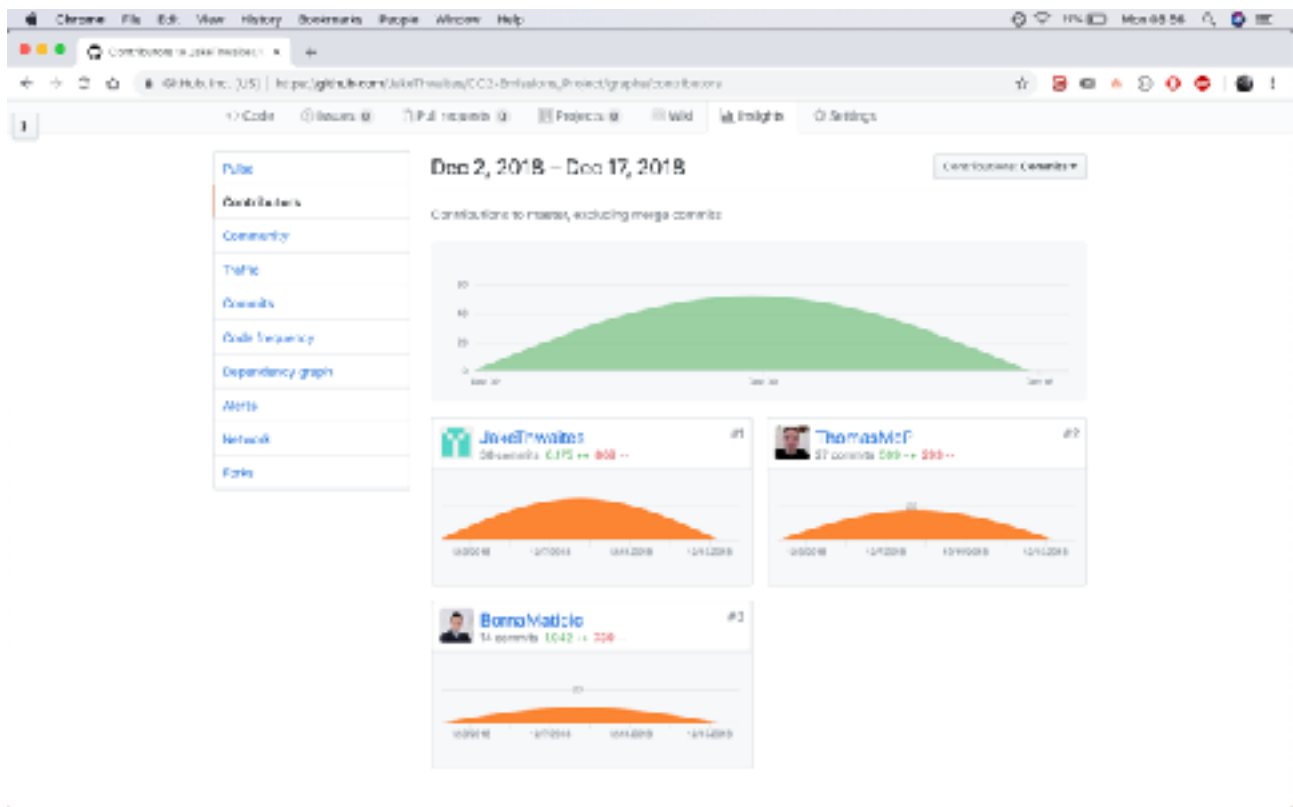
Week 9

| Unit | Ref | Evidence |
|------|-----|---|
| P | P.1 | Take a screenshot of the contributor's page on Github from your group project to show the team you worked with. |
| | | Description: |

Paste Screenshot here

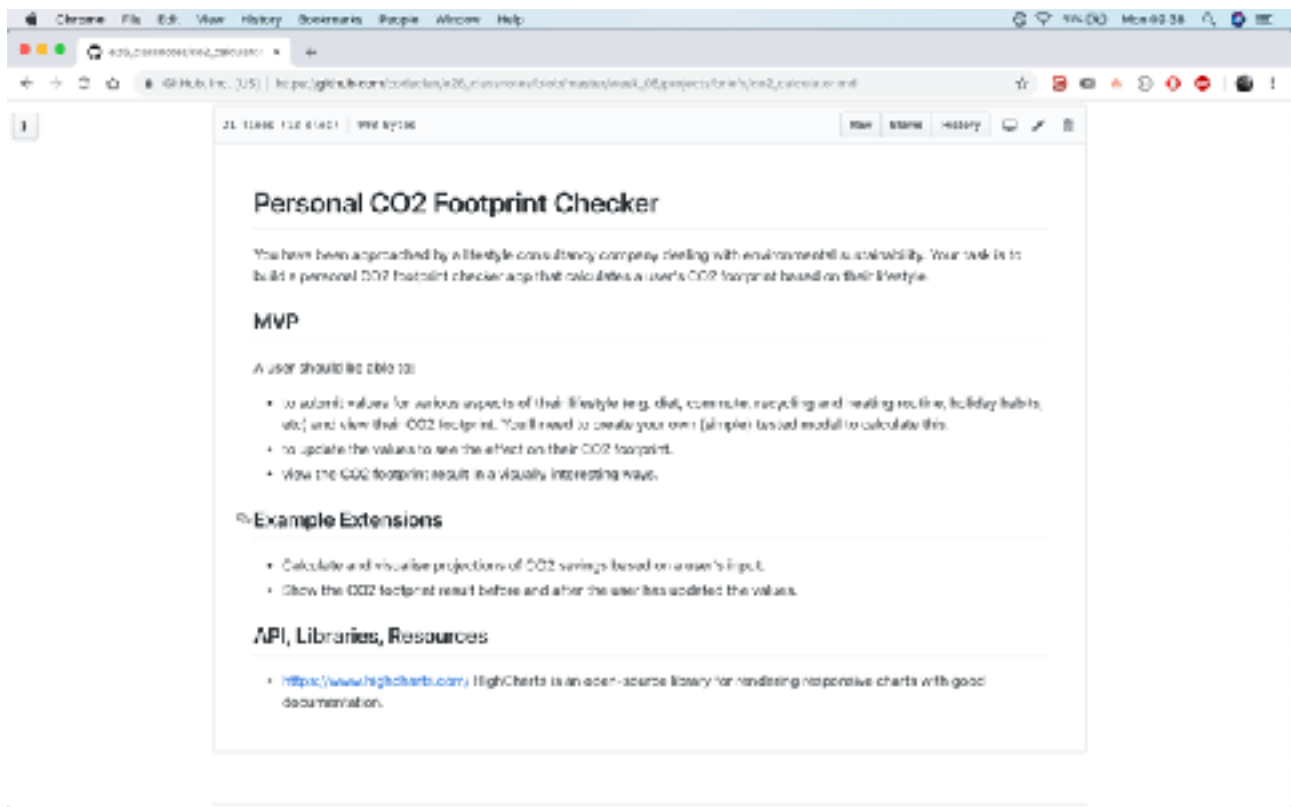
Description here

This is the contributors page from my group JavaScript project. Three of us worked together to complete the project, and made separate git commits and merges to work on parts separately.



| Unit | Ref | Evidence |
|------|-----|---|
| P | P.2 | Take a screenshot of the project brief from your group project. |
| | | Description: |

Paste Screenshot here



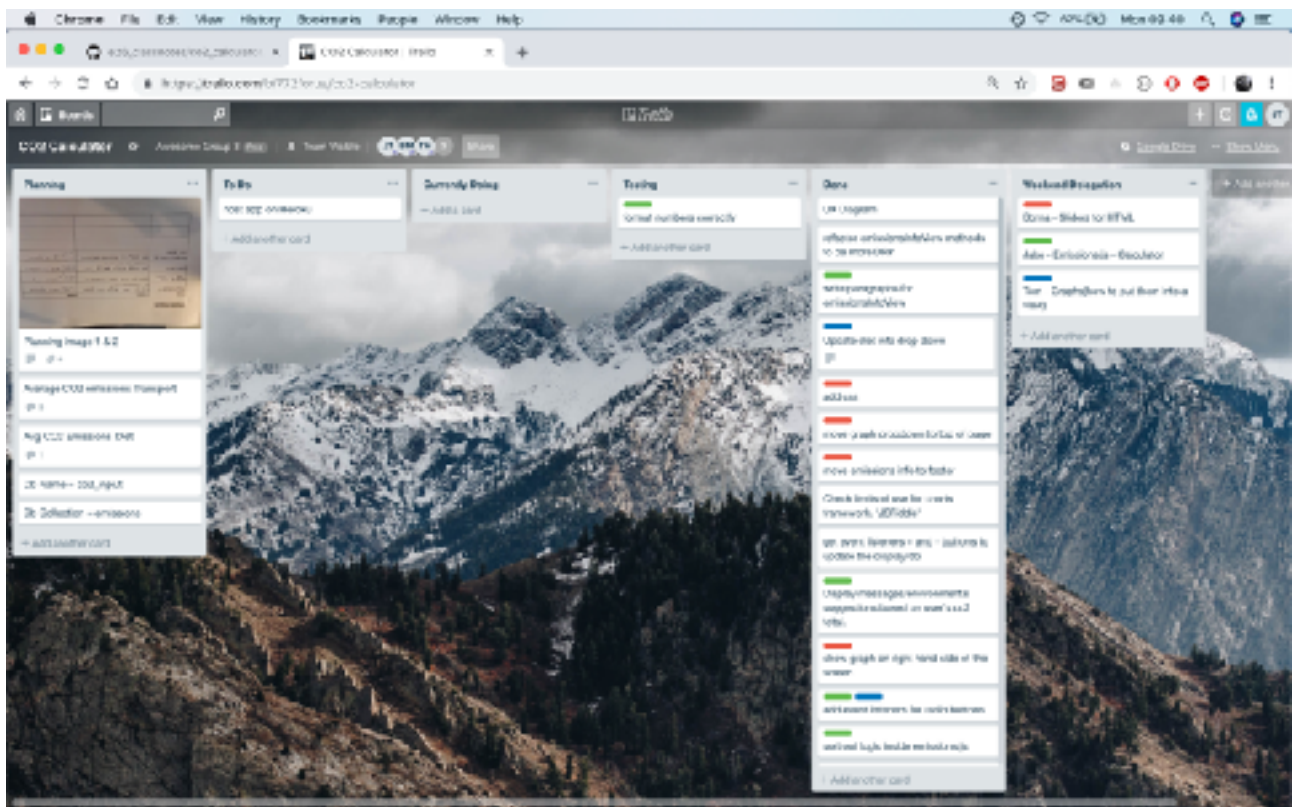
Description here

This is the brief for my group JavaScript project.

| Unit | Ref | Evidence |
|------|-----|---|
| P | P.3 | Provide a screenshot of the planning you completed during your group project, e.g. Trello MOSCOW board. |
| | | Description: |

Paste Screenshot here

Description here



We used the website 'Trello' to create a KANBAN board to organise the development process for our JavaScript application. We used different headings to organise which tasks we hadn't started, were currently working on, and had already been completed, and we used coloured labels to show who was working on each task.

| Unit | Ref | Evidence |
|------|-----|---|
| P | P.4 | Write an acceptance criteria and test plan. |
| | | |

Paste Screenshot here

| | | |
|---------------------|-------------------------|-----------|
| Acceptance Criteria | Expected Result/Outcome | Pass/Fail |
|---------------------|-------------------------|-----------|

| | | |
|--|---|------|
| A user is able to add a new animal to the list of animals in the shelter | The website adds the new animal to the database when the user inputs its details | Pass |
| A user is able to update the details of an animal in the animal shelter | The website changes the details of the selected animal when the user clicks to edit it | Pass |
| A user can view all the animals in the animal shelter | The website displays a list of all the animals when the users clicks to view all animals | Pass |
| A user can delete an animal from the database | The website deletes an animal from the database and updates the website view when the user clicks to delete an animal | Pass |

Description here

This is an acceptance criteria table for my Ruby Animal Shelter project.

| Unit | Ref | Evidence |
|------|-----|---|
| P | P.7 | Produce two system interaction diagrams (sequence and/or collaboration diagrams). |
| | | Description: |

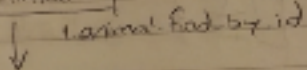
Paste Screenshot here

Edit Animal

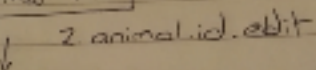
Initialisation



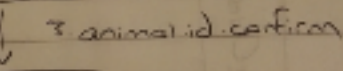
: Animals



: Animal Info



Edit



Submit



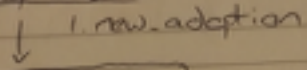
End Process

Add New Adoption

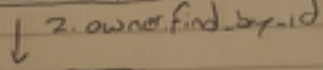
Initialisation



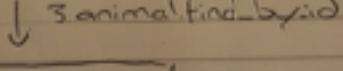
Adopters



Add New Adoption



Select owner



Select animal



End Process

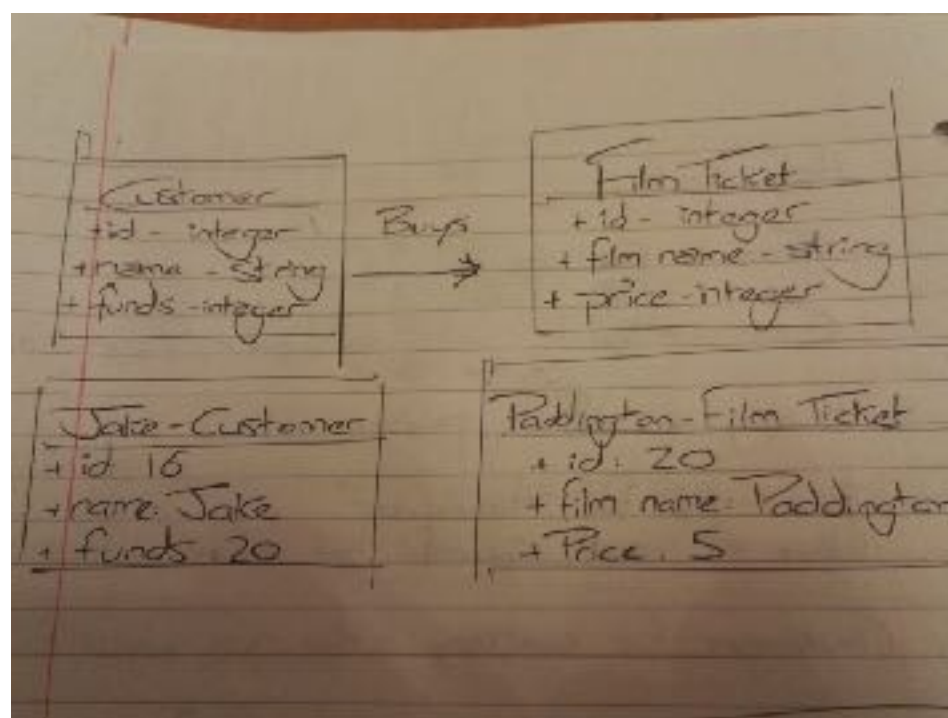
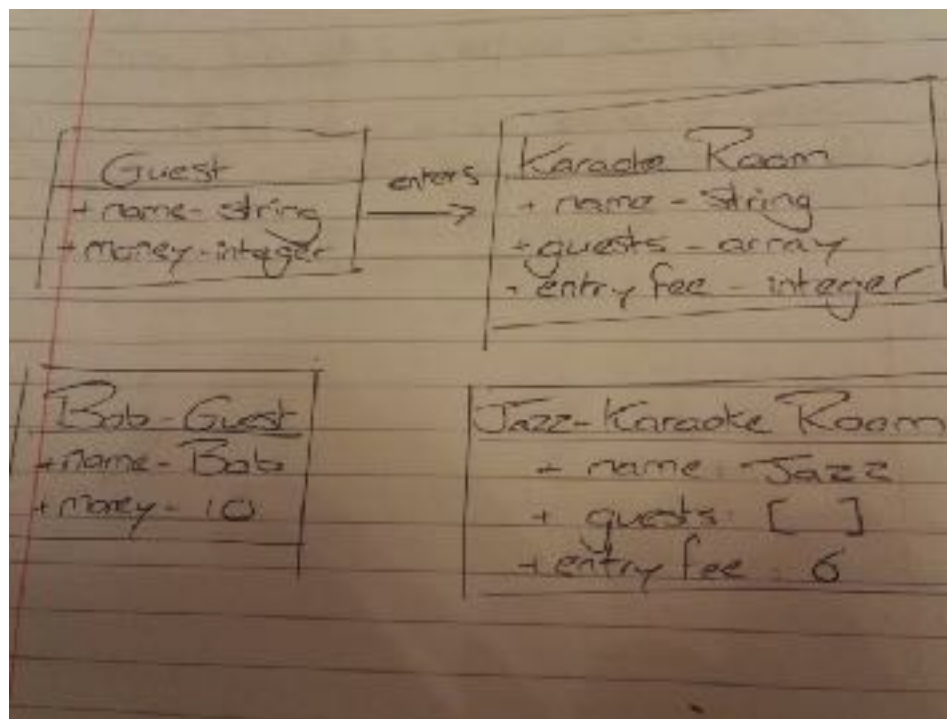
Description here

These are two collaboration diagrams for my animal shelter app. The first diagram shows adding a new adoption. The first step calls the new_adoption method to load the new adoption page. The second step finds the owner selected by the user using owner.find_by_id. The third step finds the selected animal using animal.find_by_id. The final step confirms the new animal for the owner using animal.id.confirm.

The second diagram is for the user editing an existing animal. The first step finds the selected animal using animal.find_by_id. The second step loads the edit page using animal.id.edit. The final step shows a confirmation to the user using animal.id.confirm.

| Unit | Ref | Evidence |
|------|-----|------------------------------|
| P | P.8 | Produce two object diagrams. |
| | | Description: |

Paste Screenshot here



Description here

The first object diagram shows a guest and a karaoke room. The guest can pay to enter the room using his funds, depending on the room's entry fee.

The second diagram shows a customer and a film ticket. The customer can buy the film ticket, depending on their funds.

| Unit | Ref | Evidence |
|------|------|-------------------------------|
| P | P.17 | Produce a bug tracking report |
| | | Description: |

Paste Screenshot here

Description here

| Bug/Error | Solution | Date |
|---|--|-------------------|
| The getSellingPrice method returns an error when called; wrong data type | Method must return a double rather than an integer | 18th January 2019 |
| No string returned when calling the play method on an instrument | Ensure that the method uses 'return', rather than just calling an interface method | 18th January 2019 |
| PlayString's play method doesn't return anything when called | Using @Override above the method to make sure it overrides the interface which it implements. | 18th January 2019 |
| addInstrument method returns an error when called saying it expects a different data type | Method should take in an instance of an instrument, rather than a string of the instrument's name | 18th January 2019 |
| getSellBehaviour method doesn't expect anything to be returned | Method should be marked as returning something; 'public ISell getSellBehaviour();', rather than 'public void getSellBehaviour()' | 18th January 2019 |

This is a bug tracking report for my java music shop app.

Week 12

| Unit | Ref | Evidence |
|------|-------|--|
| I&T | I.T.7 | The use of Polymorphism in a program and what it is doing. |
| | | Description: |

Paste Screenshot here

```
package Play;
public interface IPlay {
    String play();
}
```

In my Music Shop project, I used an interface called IPlay, which used a method 'play' for any class which can play i.e. instruments.

```
package Play;

public class PlayString implements IPlay {
    @Override
    public String play() { return "string-a-ling!"; }
}
```

I then created a different class for each musical instrument family e.g. PlayString which implemented the IPlay interface. Within this, I implemented the play method.

```
public class Instrument {  
    IPlay playBehaviour;  
    Integer price;  
    InstrumentType instrumentType;  
    double sellingPrice;  
  
    public Instrument(IPlay playBehaviour, Integer price, InstrumentType instrumentType) {  
        this.playBehaviour = playBehaviour;  
        this.price = price;  
        this.sellingPrice = 0;  
        this.instrumentType = instrumentType;  
    }  
}
```

I then created the instrument. class. This takes in an IPlay object as an argument and stores it as an instance variable.

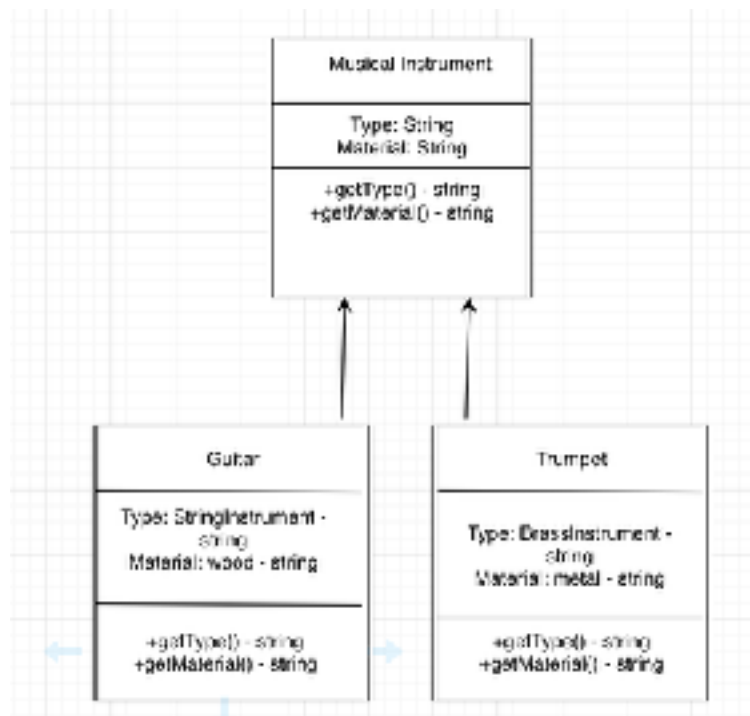
```
public String play(){  
    return playBehaviour.play();  
}
```

I then created a method within the Instrument class called play, which calls it's IPlay instance variable, and returns it's play method. This mean that the Instrument's play method will return a different string depending on the IPlay object it has as an instance variable.

Description here

| Unit | Ref | Evidence |
|------|-------|------------------------|
| A&D | A.D.5 | An Inheritance Diagram |
| | | Description: |

Paste Screenshot here



Description here

This is an inheritance diagram for an abstract class 'musical instrument'. The guitar and trumpet classes both inherit from this class; they both take the type and material attributes, and the getter methods for these.

| Unit | Ref | Evidence |
|------|-------|---|
| I&T | I.T.1 | The use of Encapsulation in a program and what it is doing. |
| | | Description: |

Paste Screenshot here

```

public abstract class FantasyCharacter {
    private String name;
    private int hitPoints;
    private double defence;
    private int attackPoints;
    private ArrayList<Item> inventory;
    private IAttack attackBehaviour;
    private IHeal healBehaviour;
    private int maxHitPoints;

    public FantasyCharacter(String name, int maxHitPoints, double defence, int attackPoints, IAttack attackBehaviour, IHeal healBehaviour) {
        this.name = name;
        this.hitPoints = maxHitPoints;
        this.maxHitPoints = hitPoints;
        this.defence = defence;
        this.attackPoints = attackPoints;
        this.inventory = new ArrayList<>();
        this.attackBehaviour = attackBehaviour;
        this.healBehaviour = healBehaviour;
    }

    public String getName() { return name; }
}

```

Description here

In this example, the instance variables of the FantasyCharacter class are set as private, and so can't be accessed from outside the class. This means that the data is encapsulated within the class, and can only be accessed if the class has a getter method, such as the getName method shown.

| Unit | Ref | Evidence |
|------|-------|--|
| I&T | I.T.2 | Take a screenshot of the use of Inheritance in a program. Take screenshots of: *A Class *A Class that inherits from the previous class *An Object in the inherited class *A Method that uses the information inherited from another class. |
| | | Description: |

Paste Screenshot here

```

public abstract class FantasyCharacter {
    private String name;
    private int hitPoints;
    private double defence;
    private int attackPoints;
    private ArrayList<Item> inventory;
    private IAttack attackBehaviour;
    private IHeal healBehaviour;
    private int maxHitPoints;

    public FantasyCharacter(String name, int maxHitPoints, double defence, int attackPoints, IAttack attackBehaviour, IHeal healBehaviour) {
        this.name = name;
        this.hitPoints = maxHitPoints;
        this.maxHitPoints = hitPoints;
        this.defence = defence;
        this.attackPoints = attackPoints;
        this.inventory = new ArrayList<>();
        this.attackBehaviour = attackBehaviour;
        this.healBehaviour = healBehaviour;
    }
}

```

```

public void attack(FantasyCharacter target) { attackBehaviour.attack(target, this.attackPoints); }

```

```

public class Fighter extends FantasyCharacter{
    public Fighter(String name, int maxHitPoints, double defence, int attackPoints, IAttack attackBehaviour, IHeal healBehaviour) {
        super(name, maxHitPoints, defence, attackPoints, attackBehaviour, healBehaviour);
    }

    fighter = new Fighter( name: "Hero", maxHitPoints: 10, defence: 0.4, attackPoints: 10, physicalAttack, cannotHeal);
}

```

```

@Test
public void canAttack(){
    fighter.attack(enemy);
    assertEquals( expected: 0, enemy.getHitPoints());
}

```

Description here

The first screenshot is an abstract class from a java fantasy game called 'FantasyCharacter'. This takes in arguments to use as instance variables, and has a function 'attack'. The 'Fighter' class shown below inherits from the abstract class, and takes in the same arguments and can use the attack method. The 4th screenshot shows an object 'fighter', which is an instance of the Fighter class. The test below then shows the fighter object using the attack method inherited from the FantasyCharacter class.

| Unit | Ref | Evidence |
|------|-----|---|
| P | P.9 | Select two algorithms you have written (NOT the group project). Take a screenshot of each and write a short statement on why you have chosen to use those algorithms. |
| | | Description: |

Paste Screenshot here

```

col public Passenger findPassengerByName(String passengerName){
    for (Passenger passenger : passengers){
        if (passenger.getName() == passengerName) {
            return passenger;
        }
    }
    return null;
}

return `s{num1} + ${num2}`
}
else if (array[i] + array[j] < sum) {
    i++
}
else {
    j--
}
}
return `No numbers in the array add together to make ${sum}.`
}

```

The first algorithm is designed to check if any two numbers in a sorted array add up to a given total. For this I used the two pointer technique, which has a variable 'i' at the first element of the array, and 'j' at the last element. If the sum of these two numbers is lower than the sum, 'i' increases by one, or if the sum is higher, 'j' decreases by one. I used this algorithm because it the fastest solution to this problem.

The second algorithm takes in a string passengerName as an argument, and searches through an array of passengers to check if any passenger has this name. The algorithm goes through the array of passengers one by one, and returns that passenger if any of them have that name. I used this algorithm as it is the most simple solution to the problem.