

PDA : Software development

ERIC CARLES – CodeClan – E18

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1 Week 2

1.1 I.T 5

```
2 # Add a new word at the end of the array
3 def add_new_word(array_of_words, new_word)
4   if(array_of_words != nil && new_word != nil)
5     array_of_words.push(new_word)
6   end
7 end

1 require_relative("it5")
2
3
4 # "dictionary" is an array of words
5 dictionary = ["alive", "deliverance", "zoo", "slivering", "flower"]
6
7 # 3 new words are added
8 add_new_word(dictionary, "iron")
9 add_new_word(dictionary, "overlive")
10 add_new_word(dictionary, "life")
11
12 puts dictionary
```

```
→ pda_project ruby it5/test_it5.rb
alive
deliverance
zoo
slivering
flower
iron
overlive
life
```

1.2 I.T 6

```
1 # Add a new country to the hash with its details
2 ▶ def add_new_country(countries, new_country, country_details)
3 ▶   if(countries != nil && new_country != nil && country_details != nil)
4     countries[new_country] = country_details
5   end
6 end

1 require_relative("it6")
2
3 # An hash is set with a default list of countries
4 countries = {"Liechtenstein" => {"capital" => "Vaduz", "population" => 5248},  
5             "Mauritius"    => {"capital" => "Port Louis", "population" => 147251},  
6             "Bhutan"        => {"capital" => "Thimphu", "population" => 101259},  
7             "Honduras"      => {"capital" => "Tegucigalpa", "population" => 735982},  
8             "Congo"         => {"capital" => "Brazzaville", "population" => 1088044},  
9              "Fiji"          => {"capital" => "Suva", "population" => 84410},  
10            "Cape Verde"    => {"capital" => "Praia", "population" => 125464},  
11            "Vanuatu"       => {"capital" => "Port Vila", "population" => 38000},  
12            "Gambia"        => {"capital" => "Banjul", "population" => 34828},  
13            "Denmark"       => {"capital" => "Copenhagen", "population" => 1231166},  
14            "Burundi"       => {"capital" => "Bujumbura", "population" => 384461},  
15            "Ethiopia"      => {"capital" => "Addis Ababa", "population" => 3040740}  
16          }
17
18 # 3 new countries are added
19 add_new_country(countries, "Bahamas", {"capital" => "Nassau", "population" => 248948})
20 add_new_country(countries, "Sierra Leone", {"capital" => "Freetown", "population" => 1070200})
21 add_new_country(countries, "Armenia", {"capital" => "Yerevan", "population" => 1121900})
22
23 # The hash content is printed out
24 puts countries
```

```
[→ pda_project ruby it6/test_it6.rb
{"Liechtenstein"=>{"capital"=>"Vaduz", "population"=>5248}, "Mauritius"=>{"capital"=>"Port Louis", "population"=>147251}, "Bhutan"=>{"capital"=>"Thimphu", "population"=>101259}, "Honduras"=>{"capital"=>"Tegucigalpa", "population"=>735982}, "Congo"=>{"capital"=>"Brazzaville", "population"=>1088044}, "Fiji"=>{"capital"=>"Suva", "population"=>84410}, "Cape Verde"=>{"capital"=>"Praia", "population"=>125464}, "Vanuatu"=>{"capital"=>"Port Vila", "population"=>38000}, "Gambia"=>{"capital"=>"Banjul", "population"=>34828}, "Denmark"=>{"capital"=>"Copenhagen", "population"=>1231166}, "Burundi"=>{"capital"=>"Bujumbura", "population"=>384461}, "Ethiopia"=>{"capital"=>"Addis Ababa", "population"=>3040740}, "Bahamas"=>{"capital"=>"Nassau", "population"=>248948}, "Sierra Leone"=>{"capital"=>"Freetown", "population"=>1070200}, "Armenia"=>{"capital"=>"Yerevan", "population"=>1121900}]
```

2 Week 3

2.1 I.T 3

```
11 # Find in the dictionary the words with contain the given string pattern
12 # Return the array of the matching words
13 def find_matching_words(array_of_words, pattern)
14
15   matching_words = Array.new();
16
17   if(array_of_words != nil && pattern != nil)
18     array_of_words.each do |word|
19       matching_words.push(word) if word.include?(pattern)
20     end
21   end
22
23   return matching_words
24
25 end

1 require_relative("it5")
2
3
4 # "dictionary" is an array of words
5 dictionary = ["alive", "deliverance", "zoo", "slivering", "flower"]
6
7 # 3 new words are added
8 add_new_word(dictionary, "iron")
9 add_new_word(dictionary, "overlive")
10 add_new_word(dictionary, "life")
11
12 #puts dictionary
13
14 # "dictionary" is passed to the function "find_matching_words"
15 # to find the words which contain the string pattern "live"
16 matching_words = find_matching_words(dictionary, "live")
17
18 # the found words are printed in the console
19 puts matching_words
20 |
```

```
[→ pda_project ruby it5/test_it5.rb
alive
deliverance
slivering
overlive
-
```

2.2 I.T 4

```

9 # Return an array which contains the countries sorted by decreasing population
10 def sort_countries_by_population_desc(countries)
11
12   sorted_countries = Array.new()
13
14   if(countries != nil)
15
16     countries.each do |country, details|
17
18       if(sorted_countries.count() > 0)
19         insertion_index = sorted_countries.index(
20           sorted_countries.select { |country_sorted| country_sorted["population"] <= details["population"]}.first())
21       else
22         insertion_index = 0
23       end
24
25       sorted_countries.insert(insertion_index, {"country" => country,
26                                         "capital" => details["capital"],
27                                         "population" => details["population"]})
28     end
29   end
30
31   return sorted_countries
32 end

1 require_relative("it6")
2
3 # An hash is set with a default list of countries
4 countries = {"Liechtenstein" => {"capital" => "Vaduz", "population" => 5248},
5               "Mauritius" => {"capital" => "Port Louis", "population" => 147251},
6               "Bhutan" => {"capital" => "Thimphu", "population" => 101259},
7               "Honduras" => {"capital" => "Tegucigalpa", "population" => 735982},
8               "Congo" => {"capital" => "Brazzaville", "population" => 1088044},
9               "Fiji" => {"capital" => "Suva", "population" => 84410},
10              "Cape Verde" => {"capital" => "Praia", "population" => 125464},
11              "Vanuatu" => {"capital" => "Port Vila", "population" => 38000},
12              "Gambia" => {"capital" => "Banjul", "population" => 34828},
13              "Denmark" => {"capital" => "Copenhagen", "population" => 1231166},
14              "Burundi" => {"capital" => "Bujumbura", "population" => 384461},
15              "Ethiopia" => {"capital" => "Addis Ababa", "population" => 3040740}
16 }
17
18 # 3 new countries are added
19 add_new_country(countries, "Bahamas", {"capital" => "Nassau", "population" => 248948})
20 add_new_country(countries, "Sierra Leone", {"capital" => "Freetown", "population" => 1070200})
21 add_new_country(countries, "Armenia", {"capital" => "Yerevan", "population" => 1121900})
22
23 # The hash content is printed out
24 # puts countries
25
26 puts sort_countries_by_population_desc(countries)

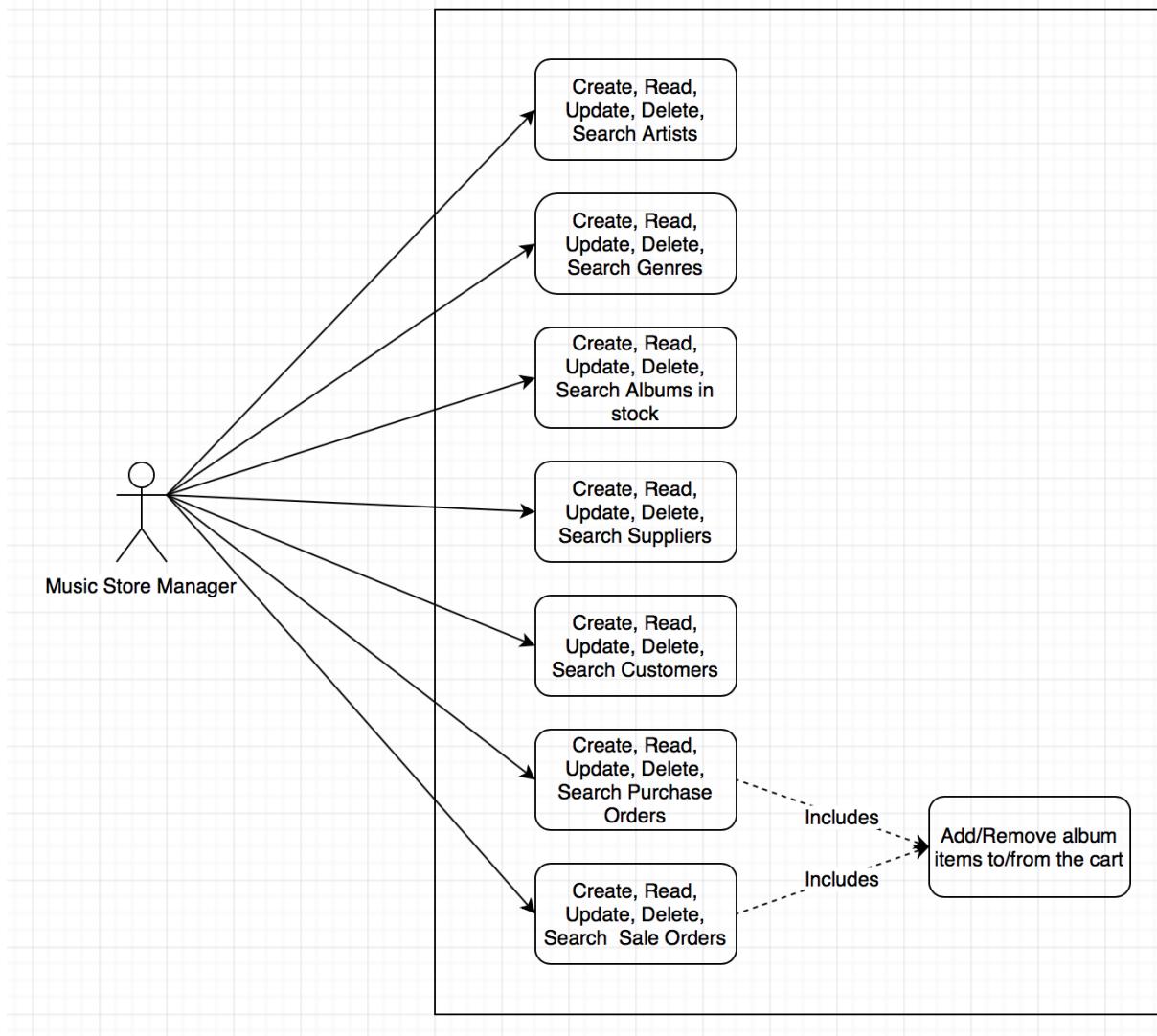
```

```
[→ pda_project ruby it6/test_it6.rb
{"country"=>"Ethiopia", "capital"=>"Addis Ababa", "population"=>3040740}
 {"country"=>"Denmark", "capital"=>"Copenhagen", "population"=>1231166}
 {"country"=>"Armenia", "capital"=>"Yerevan", "population"=>1121900}
 {"country"=>"Congo", "capital"=>"Brazzaville", "population"=>1088044}
 {"country"=>"Sierra Leone", "capital"=>"Freetown", "population"=>1070200}
 {"country"=>"Honduras", "capital"=>"Tegucigalpa", "population"=>735982}
 {"country"=>"Burundi", "capital"=>"Bujumbura", "population"=>384461}
 {"country"=>"Bahamas", "capital"=>"Nassau", "population"=>248948}
 {"country"=>"Mauritius", "capital"=>"Port Louis", "population"=>147251}
 {"country"=>"Cape Verde", "capital"=>"Praia", "population"=>125464}
 {"country"=>"Bhutan", "capital"=>"Thimphu", "population"=>101259}
 {"country"=>"Fiji", "capital"=>"Suva", "population"=>84410}
 {"country"=>"Vanuatu", "capital"=>"Port Vila", "population"=>38000}
 {"country"=>"Gambia", "capital"=>"Banjul", "population"=>34828}
 {"country"=>"Liechtenstein", "capital"=>"Vaduz", "population"=>5248}
```

3 Week 5

3.1 A.D 1

Use Cases for the manager of a music store

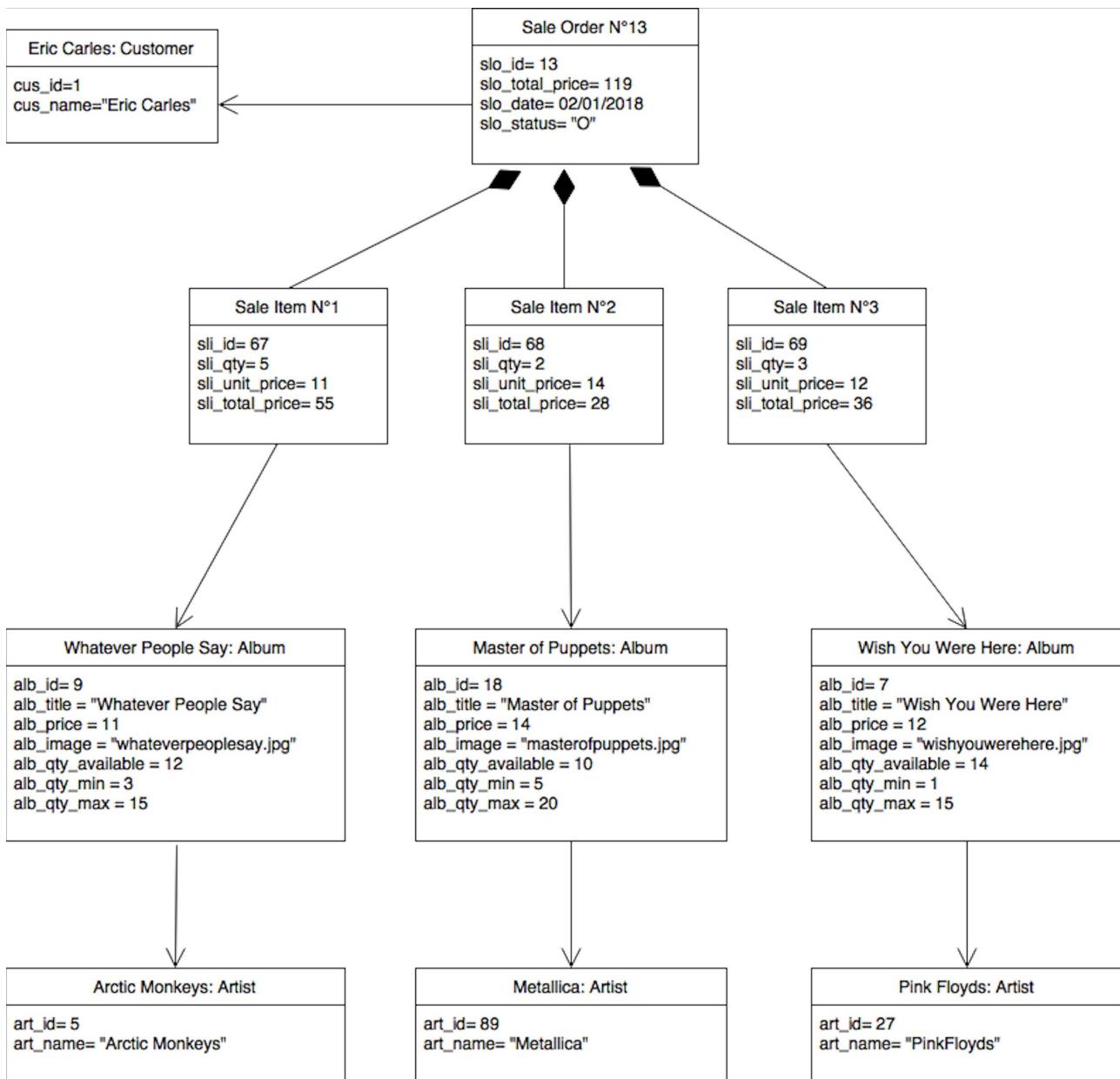


3.2 A.D 2

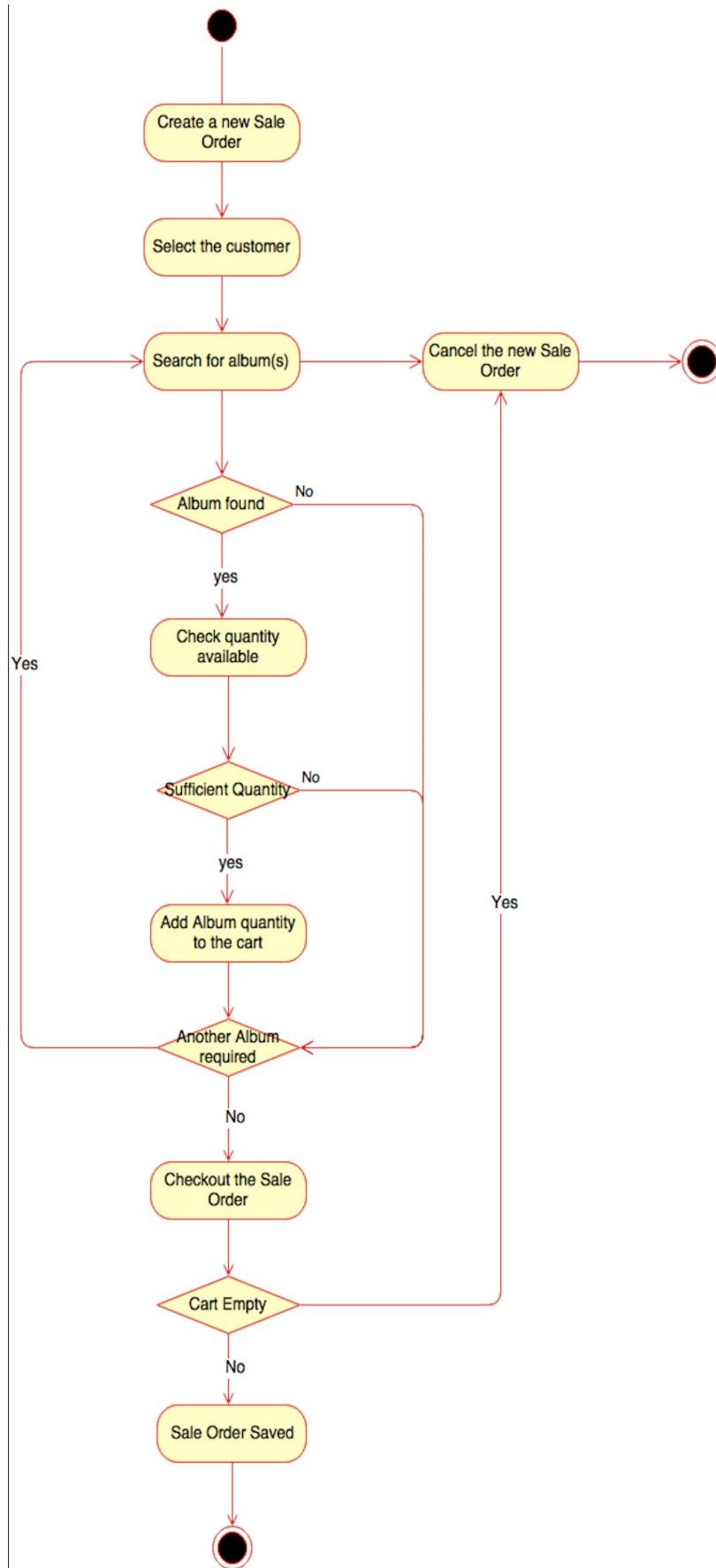
Class Diagram of the music store management application



3.3 A.D 3



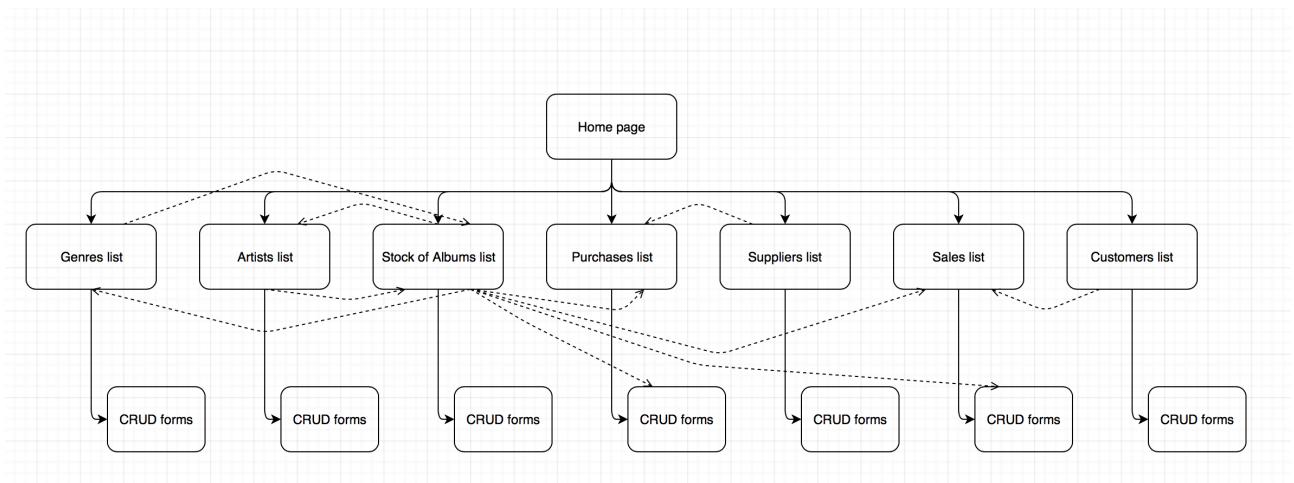
3.4 A.D 4



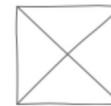
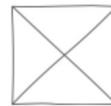
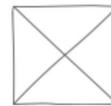
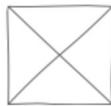
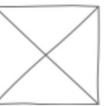
3.5 A.D 6

Topic	Possible effect of constraints on product	Solution
Hardware and software platforms	The software platform is made of Ruby without any Javascript. This induces that when the user performs an action then the whole page is reloaded.	Track the status of each page to be sure that after reloading the status page is still consistent.
Performance requirements	The Ruby language is not well-known for its performance and can induce a time lagging.	Limit the number of results on each page.
Persistent storage and transactions	The data like the artists, the albums, the album sales and purchases must be persisted.	Use the "postgresql" database as a support for persistence.
Usability	The application might be used with different screen resolutions.	Implement responsive user interfaces.
Budget	The cost of licenses must be £0.	Use only free frameworks and tools like the Ruby Sinatra framework and Atom as an IDE.
Time limitation	1 week project.	Ordered the functional project priorities relying on the "MosCow" approach.

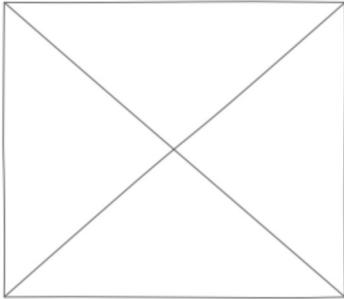
3.6 P 5



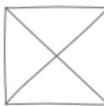
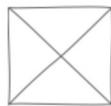
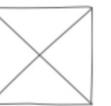
3.7 P 6

						
Genres	Artists	Stock of Albums	Purchases	Suppliers	Sales	Customers

Add a new album in the stock

	Artist	U2
	Genre	POP/ROCK
	Title	Song of innocence
	Stock quantity	30
	Stock min.	5
	Stock max.	40
	Unit. Sale Price	£ 14
		<input type="button" value="Save"/>

Wireframe N°1/2 : Create/Modify an album

						
Genres	Artists	Stock of Albums	Purchases	Suppliers	Sales	Customers

Albums Nb results max. : 100 [Create new entry](#)

Cover	Title	Artist	Genre	Stock	Unit Sale Price	Sales		
	Song of innocence	U2	View	Pop/Rock View	Available 10 Purchase Min. 3 Max. 20	£14 Sale Total quantity 50 Sales Modify Delete Turnover £600		

Wireframe N°2/2 : List of albums in stock

3.8 P 10

```
# Pseudocode to find all the albums which match with the provided filters
# find_albums_with_filters(filters, limit)
# - Initialize the sql query for albums
# - For each filter in filters
#       if the filter value is not null
#           then add the filter to the WHERE clause of the query
#       end if
#   end for
# - Add the clause ORDER BY title to the sql query
# - if limit > 0
#     then add the statement LIMIT to the sql query
# end if
# - Return the result of the sql query execution
```

3.9 P 13

The manager creates a new stock entry for the album “Wish You Were Here” :

[Genres](#) [Artists](#) [Albums](#) [Customers](#) [Suppliers](#) [Sale Orders](#) [Purchase Orders](#)

Add a new Album in the Stock

Artist	<input type="text" value="Pink Floyd"/>
Genre	<input type="text" value="Rock"/>
Title	<input type="text" value="Wish You Were Here"/>
Quantity in stock	<input type="text" value="10"/>
Min. Stock	<input type="text" value="3"/>
Max. Stock	<input type="text" value="20"/>
Sale Price per unit (£)	<input type="text" value="14"/>

[Save](#)

As a result, the new album is now present in the stock :

Genres	Artists	Albums	Customers	Suppliers	Sale Orders	Purchase Orders
		Albums				
			<input type="text" value="Wish You Were Here"/>	<input type="text" value="Artist"/>	<input type="text" value="Genres"/>	<input type="text" value="Stock Level"/>

Create a new Album

Cover	Title & Artist	Genre	Stock	Purchases	Price/Unit	Sales	Modify	Delete
	Wish You Were Here Pink Floyd	Rock	Avail. Min. Max. 10 3 20	Qty Pur. Total Nb. Sup. 0 £0 0	£14	Qty Sold Total Nb. Cus. 0 £0 0	Modify	Delete

3.10 P 14

```
75 # Collect all the sale items whose quantity > 0 and add them to the sale order
76 post NavSaleOrders::POST_ADD_ITEMS do
77
78   sale_item_from_params = params.select { |key, value| key.match(/qty_alb_id_*/)}
79   sale_items_to_add      = []
80   sale_item_from_params.each do |key, value|
81     if(value.to_i) > 0
82       sale_item           = SaleItem.new(nil)
83       sale_item.sli_alb_id = key.sub("qty_alb_id_", "").to_i
84       sale_item.sli_qty    = params["qty_alb_id_#{sale_item.sli_alb_id}"].to_i
85       sale_items_to_add.push(sale_item)
86     end
87   end
88
89   sale_order_id = params['slo_id'].to_i
90   customer_id   = params["slo_cus_id"].to_i
91
92   if(sale_order_id == 0)
93     @sale_order = SaleOrder.new({ "slo_cus_id"      => customer_id,
94                               "slo_total_price" => 0,
95                               "slo_date"        => Time.now,
96                               "slo_status"      => SaleOrder::STATUS_ONGOING})
97   else
98     @sale_order = SaleOrder.find_by_id(sale_order_id)
99     @sale_order.slo_cus_id = customer_id
100  end
101
102  @sale_order.save()
103  @sale_order.update_order_with_items(sale_items_to_add)
104
105  redirect(:#{NavSaleOrders.nav_get_edit_by_id(@sale_order.slo_id)})
106 end
107
108 # Perform an insert or an update depending on the value of art_id
109 def save()
110   if(@slo_id) #if the row already exists
111     update()
112   else
113     insert()
114   end
115 end
```

```

279  def insert()
280      query = "INSERT INTO sale_orders (slo_cus_id, slo_total_price, slo_date, slo_status)
281          VALUES ($1, $2, $3, $4) RETURNING slo_id"
282      @slo_id = DBHelper.run_sql_return_first_row_column_value(query,
283          [@slo_cus_id, @slo_total_price, @slo_date, @slo_status], 'slo_id')
284  end
285
286  def update()
287      query   = "UPDATE sale_orders SET (slo_cus_id, slo_total_price, slo_date, slo_status) =
288                  ($1, $2, $3, $4) WHERE slo_id = $5"
289      DBHelper.run_sql(query, [@slo_cus_id, @slo_total_price, @slo_date,@slo_status, @slo_id])
290  end
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3.11 P 15

The manager of the music albums store wants to select the albums whose kind is “Pop” and which are running low :

Genres	Artists	Albums	Customers	Suppliers	Sale Orders	Purchase Orders
Albums <input type="text" value="Title"/> <input type="text" value="Artist"/> <input type="button" value="Pop"/> <input type="button" value="Low"/> <input type="button" value="List"/> <input type="button" value="GO !"/> Create a new Album						
Cover	Title & Artist	Genre	Stock	Purchases	Price/Unit	Sales
	A Hard Day's Night The Beatles	Pop	Avail. Min. Max. 9 5 15	Qty Pur. Total Nb. Sup. 18 £66 4	£16	Qty. Sold Total Nb. Cus. 14 £224 3
	A Quick One The Who	Pop	Avail. Min. Max. 5 0 15	Qty Pur. Total Nb. Sup. 7 £40 3	£24	Qty. Sold Total Nb. Cus. 13 £312 3
	Abraxas Santana	Rock	Avail. Min. Max. 6 5 18	Qty Pur. Total Nb. Sup. 3 £8 2	£11	Qty. Sold Total Nb. Cus. 2 £22 1
	Achtung Baby U2	Death Metal	Avail. Min. Max. 10 3 17	Qty Pur. Total Nb. Sup. 5 £35 3	£37	Qty. Sold Total Nb. Cus. 14 £518 3
	Aladdin Sane David Bowie	Rock	Avail. Min. Max. 7 5 17	Qty Pur. Total Nb. Sup. 7 £42 1	£19	Qty. Sold Total Nb. Cus. 4 £76 1

As a result, the list of the matching albums is displayed :

Genres	Artists	Albums	Customers	Suppliers	Sale Orders	Purchase Orders
Albums <input type="text" value="Title"/> <input type="text" value="Artist"/> <input type="button" value="Pop"/> <input type="button" value="Low"/> <input type="button" value="List"/> <input type="button" value="GO !"/> Create a new Album						
Cover	Title & Artist	Genre	Stock	Purchases	Price/Unit	Sales
	Brothers in Arms Dire Straits	Pop	Avail. Min. Max. 0 1 15	Qty Pur. Total Nb. Sup. 0 £0 0	£50	Qty. Sold Total Nb. Cus. 0 £0 0
	LA Woman The Doors	Pop	Avail. Min. Max. 1 3 17	Qty Pur. Total Nb. Sup. 0 £0 0	£27	Qty. Sold Total Nb. Cus. 0 £0 0
	The Who Sings My Generation The Who	Pop	Avail. Min. Max. 2 2 18	Qty Pur. Total Nb. Sup. 3 £6 1	£27	Qty. Sold Total Nb. Cus. 1 £27 1

3.12 I.T Task A

Please check https://github.com/BlueMorning/Eric_Carles_E18_PDA for the Task A.

The 3 tests which fail :

```
Run options: --seed 64068
# Running:
E
Finished in 0.001016s, 984.2517 runs/s, 0.0000 assertions/s.

1) Error:
TestCardGame#test_checkforAce:
NameError: uninitialized constant TestCardGame::Card
  specs/test_testing_task_A2.rb:8:in `setup'

1 runs, 0 assertions, 0 failures, 1 errors, 0 skips
```

```
Run options: --seed 60907
# Running:
.E
Finished in 0.000680s, 2941.1742 runs/s, 1470.5871 assertions/s.

1) Error:
TestCardGame#test_highest_card:
NoMethodError: undefined method `name' for #<Card:0x00007f8f7d0c4630 @suit="spad
e", @value=8>
  /Users/horizon/Documents/codeclan_work/Eric_Carles_e18_PDA/testing_task_A/ca
rdGame_task_A2/cardGame.rb:24:in `highest_card'
  specs/test_testing_task_A2.rb:18:in `test_highest_card'

2 runs, 1 assertions, 0 failures, 1 errors, 0 skips
```

```
Run options: --seed 5404
# Running:
..E
Finished in 0.000850s, 3529.4100 runs/s, 2352.9400 assertions/s.

1) Error:
TestCardGame#test_cards_total:
TypeError: no implicit conversion of Integer into String
  /Users/horizon/Documents/codeclan_work/Eric_Carles_e18_PDA/testing_task_A/ca
rdGame_task_A2/cardGame.rb:33:in `+'
  /Users/horizon/Documents/codeclan_work/Eric_Carles_e18_PDA/testing_task_A/ca
rdGame_task_A2/cardGame.rb:33:in `cards_total'
  specs/test_testing_task_A2.rb:22:in `test_cards_total'

3 runs, 2 assertions, 0 failures, 1 errors, 0 skips
```

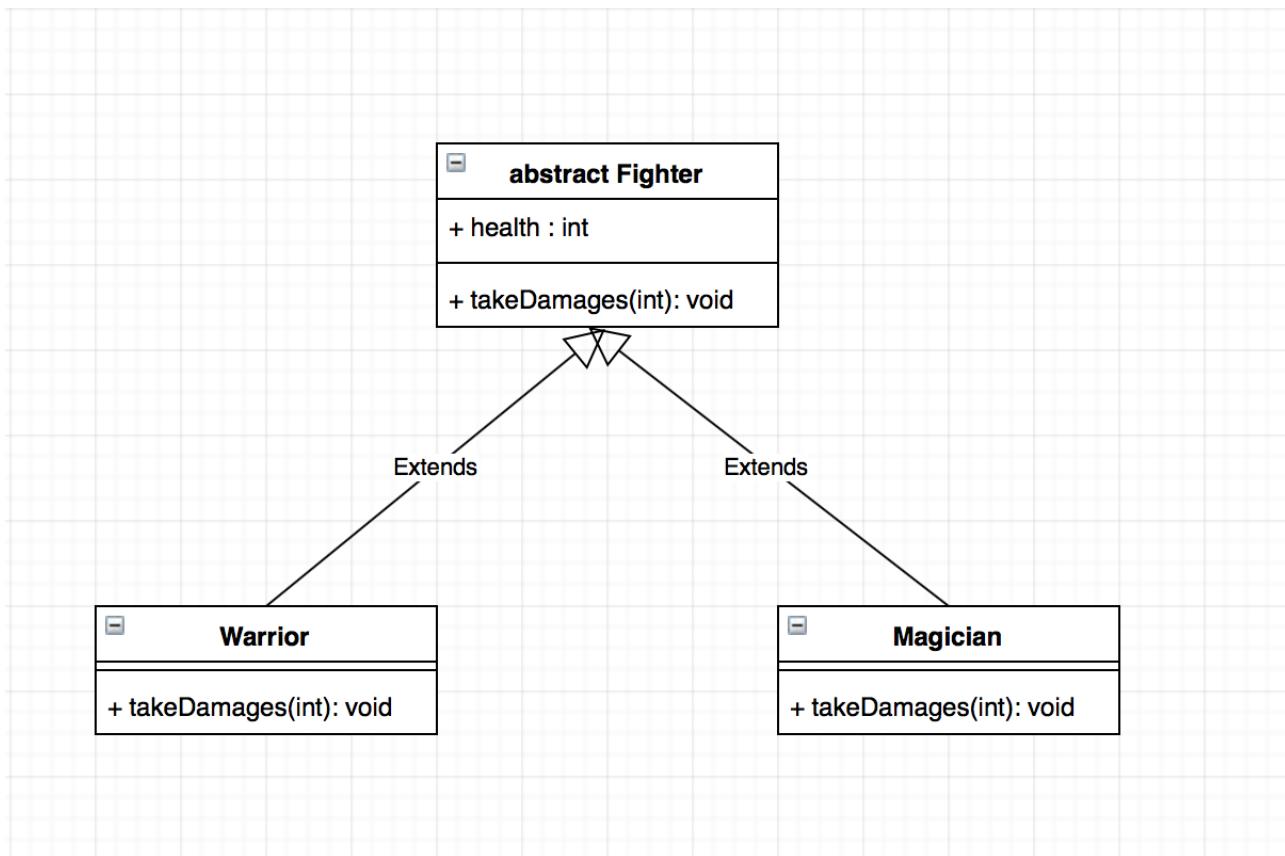
The 3 tests which pass :

```
Run options: --seed 37129
# Running:
...
Finished in 0.000939s, 3194.8900 runs/s, 3194.8900 assertions/s.

3 runs, 3 assertions, 0 failures, 0 errors, 0 skips
```

4 Week 6

4.1 I.T 7



In this example I'm using an abstract class "Fighter" and 2 sub-classes : "Warrior" and "Magician".

The abstract class "Fighter" has an abstract method "takeDamages".

```
1  public abstract class Fighter {
2
3      protected String name;
4      protected int health;
5
6
7
8      public Fighter(String name, int health){
9          this.name = name;
10         this.health = health;
11     }
12
13     public abstract void takeDamages(int damages);
14
15 }
```

Both sub-classes has a different implementation of this method :

The damages taken by the "Warrior" are reduced by its armor.

```
1  public class Warrior extends Fighter {  
2  
3      private int armor;  
4  
5      public Warrior(String name, int health, int armor){  
6          super(name, health);  
7          this.armor = armor;  
8      }  
9  
10     @Override  
11     public void takeDamages(int damages) {  
12         this.health -= Math.max(0, damages - armor);  
13     }  
14 }  
15 }
```

While the Wizard does not have any protection to reduce the damages :

```
1  public class Wizard extends Fighter {  
2  
3  
4  
5      public Wizard(String name, int health) {  
6          super(name, health);  
7      }  
8  
9      @Override  
10     public void takeDamages(int damages) {  
11         this.health -= damages;  
12     }  
13 }  
14 }
```

In the runner file a "Warrior" and a "Wizard" objects are created and both are added in an array of "Fighter" objects. Both have an initial health of 10 points.

Then the "takeDamages" is called on both with a damage value of 5 points.

```
5 ► public class Runner {  
6  
7 ►   public static void main(String[] args){  
8  
9     Warrior warrior = new Warrior( name: "Conan", health: 10, armor: 3);  
10    Wizard wizard = new Wizard( name: "Harry Potter", health: 10);  
11  
12    ArrayList<Fighter> fighters = new ArrayList<>();  
13    fighters.add(warrior);  
14    fighters.add(wizard);  
15  
16  
17    for(Fighter fighter : fighters){  
18      fighter.takeDamages(5);  
19    }  
20  
21    for(Fighter fighter : fighters){  
22      System.out.println(String.format("%s health is : %s", fighter.name, fighter.health));  
23    }  
24  }  
}
```

The result shows that the damages of the “Warrior” have been reduced by 3 points thanks to his armor while the “Wizard” has lost 5 points.

```
Conan's health is : 8  
Harry Potter's health is : 5
```

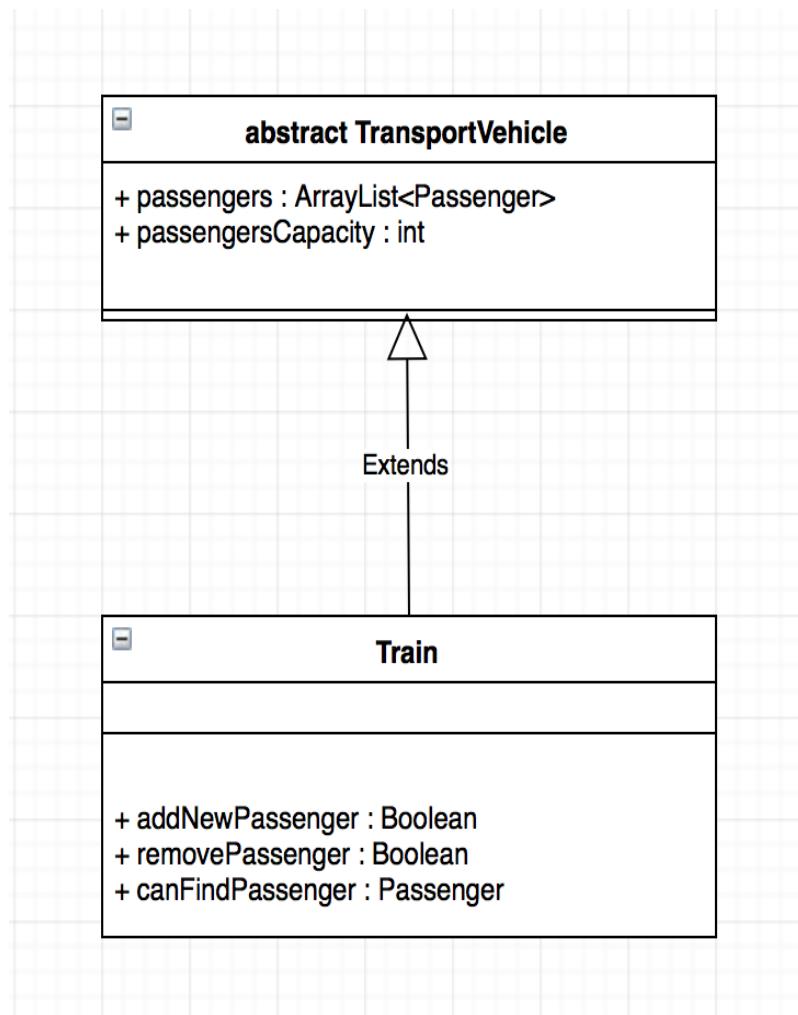
```
Process finished with exit code 0
```

To conclude, “Warrior” and “Wizard” objects can have different forms, they can be considered as “Fighter” objects. However, even under a “Fighter” form they behave specifically depending on their class “Warrior” and “Wizard”, this feature is an illustration of polymorphism.

5 Week N°9

5.1 A.D 5

In this example, the class "Train" inherits from the abstract class "TransportVehicle"



5.2 I.T1

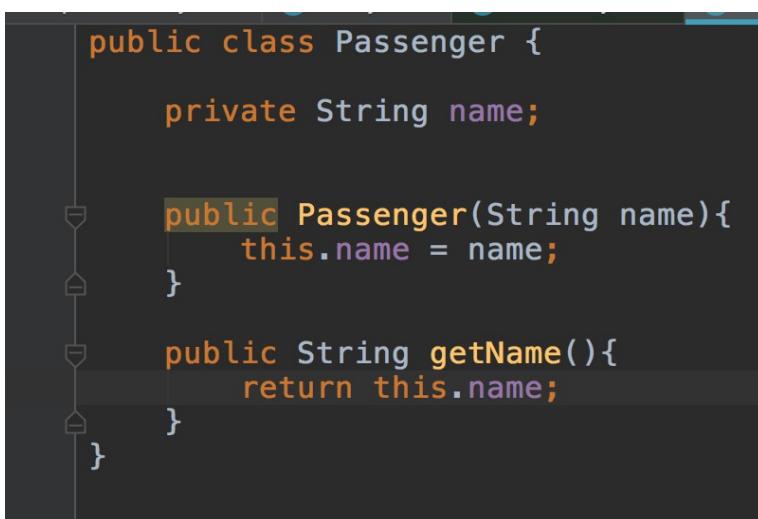
The “TransportVehicle” class is an abstract class whose properties passengerCapacity and passengers are declared “protected”. Thus, only classes which extend TransportVehicle can see them.

```
import java.util.ArrayList;

public abstract class TransportVehicle {

    protected int passengerCapacity;
    protected ArrayList<Passenger> passengers;
}
```

In this second example, the property “name” is declared as private thus it's visibility is limited to the class itself. The public method “getName” provides a way to other classes to get the name of the passenger.



A screenshot of a Java code editor showing the definition of the Passenger class. The code is as follows:

```
public class Passenger {

    private String name;

    public Passenger(String name){
        this.name = name;
    }

    public String getName(){
        return this.name;
    }
}
```

5.3 I.T2

The “TransportVehicle” class is an abstract class.

```
import java.util.ArrayList;

public abstract class TransportVehicle {

    protected int passengerCapacity;
    protected ArrayList<Passenger> passengers;
}
```

The "Train" class inherits from TransportVehicle with the keyword "extends"

```
import java.util.ArrayList;

public class Train extends TransportVehicle {

    public Train(int passengerCapacity) {
        super(passengerCapacity);
        this.passengers = new ArrayList<>();
    }

    public Passenger findPassenger(String passengerName){
        for(Passenger passenger : this.passengers){
            if(passenger.getName().equals(passengerName)){
                return passenger;
            }
        }
        return null;
    }

    public boolean addNewPassenger(Passenger newPassenger){
        if(this.passengers.size() < this.passengerCapacity){
            this.passengers.add(newPassenger);
            return true;
        }
        else{
            return false;
        }
    }

    public boolean removePassenger(Passenger passenger){
        if(this.passengers.contains(passenger)){
            this.passengers.remove(passenger);
            return true;
        }
        else{
            return false;
        }
    }
}
```

The "Train" class uses the property "passengerCapacity" and "passengers" inherited from the "TransportVehicle" class to manage the passengers who get on or off the train.

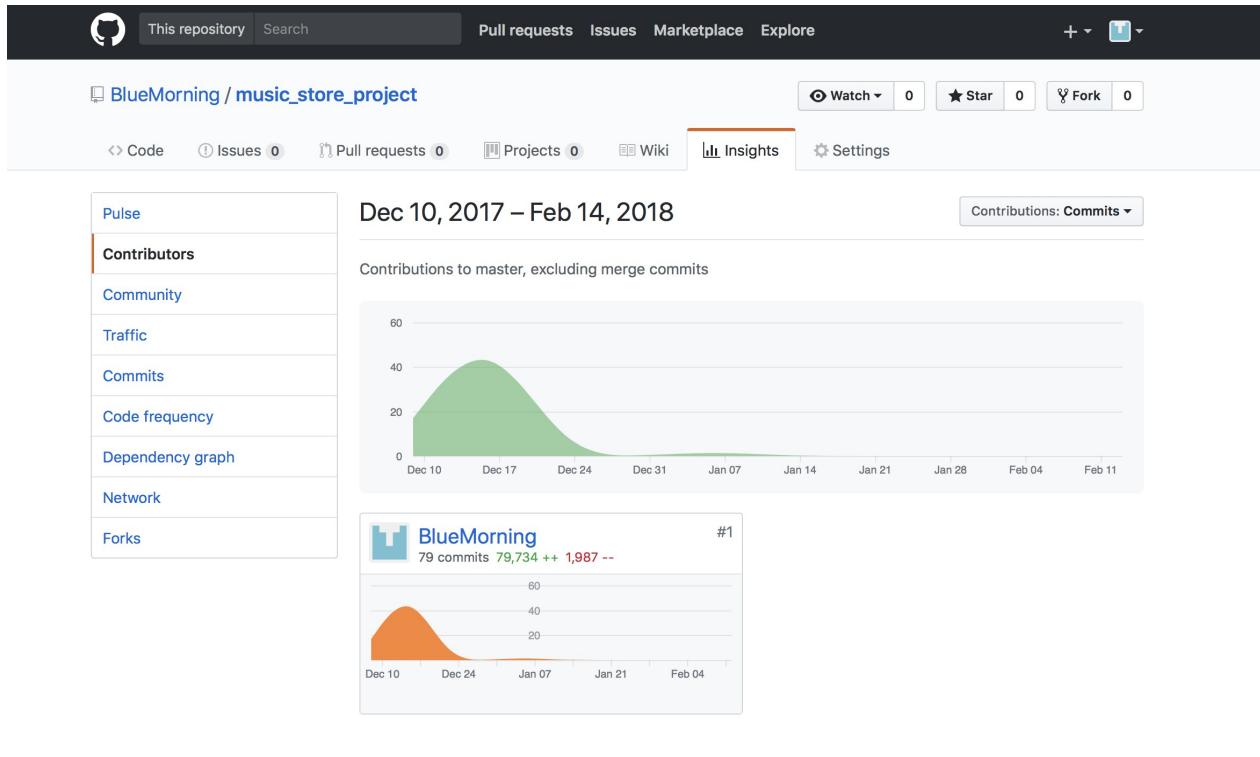
The list of passengers is encapsulated in the class "Train" : it is not visible from outside the class. However, the "Train" class provides methods to manage the list of passengers :

- findPassenger : find a passenger by his name
- addNewPassenger : add a new passenger onboard
- removePassenger : remove a passenger from the list when he gets off the train.

Thus, for other classes, the management of the list of passengers is a blackbox.

5.4 P 11

https://github.com/BlueMorning/music_store_project



5.5 P12

About the planning of the Music Store project, the features and their priorities are referenced in the table above :

Music Store project

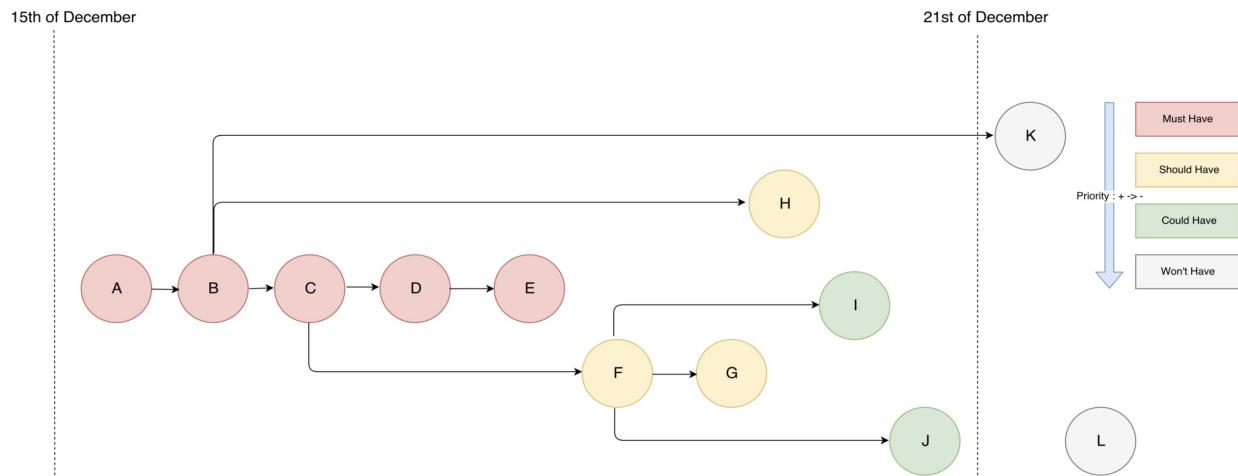
Features

Task Id.	Features	Priority	Dependency
A	CRUD Artists	1	-
B	CRUD Albums	1	A
C	CRUD Stocks	1	B
D	Display the inventory	1	C
E	Show a stock level for each album	1	D
F	Add a buy and sell price to each stock item	2	C
G	Calculate the possible markup on items and show on inventory page	2	F
H	Add a genre to an album	2	B
I	CRUD Suppliers	3	F
J	CRUD Customers	3	F
K	CRUD Tracks	4	B
L	CRUD Stores	4	-

Must Have	1
Should Have	2
Could Have	3
Won't Have	4

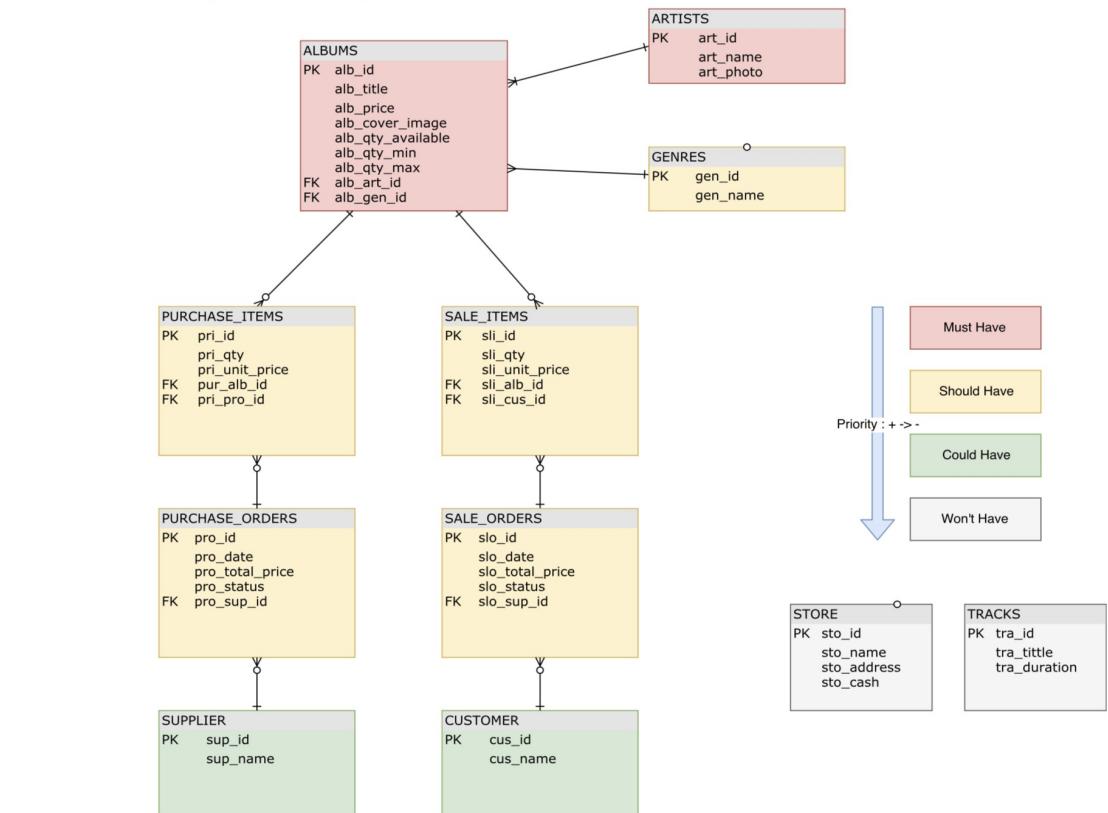
From the priorities and by following the dependencies between features, I drew this Gantt diagram to order the tasks :

Music Store Project : Gantt diagram



The ER diagram describes the schema of the database in order to persist data from the Music Store :

Music Store Project : ER diagram



This stage of development was just after adding the list of albums :

- [Genres](#)
- [Artists](#)
- [Albums](#)
- [Customers](#)
- [Suppliers](#)
- [Sale Orders](#)
- [Purchase Orders](#)

Albums

Create a new Album		Title & Artist	Genre	Stock Purchases	Price/Unit	Sales	Modify	Delete
Cover				Avail. Qty Pur.	Qty. Sold			
	A Hard Day's Night The Beatles		Pop	9 18	14			
	A Quick One The Who		Pop	5 66	£16	Total 224	Modify	Delete
	Abraxas Santana		Rock	Max. Nb. Sup.	Nb. Cus.			
	Achtung Baby U2		Death Metal	15 4	3			
				Avail. Qty Pur.	Qty. Sold			
				5 7	13			
				Total	Modify	Delete		
				0 40	£312			
				Max. Nb. Sup.	Nb. Cus.			
				15 3	3			
				Avail. Qty Pur.	Qty. Sold			
				6 3	2			
				Total	Modify	Delete		
				5 8	£22			
				Max. Nb. Sup.	Nb. Cus.			
				18 2	1			
				Avail. Qty Pur.	Qty. Sold			
				10 5	14			
				Total	Modify	Delete		
				3 35	£518			
				Max. Nb. Sup.	Nb. Cus.			
				17 3	3			

This stage of development was just after adding the form to filter the albums and the styling :

Genres	Artists	Albums	Customers	Suppliers	Sale Orders	Purchase Orders																																																									
Albums <table border="1"> <thead> <tr> <th>Title</th><th>Artist</th><th>Genres</th><th>Stock Level</th><th>List</th><th>GO !</th><th colspan="2"></th></tr> </thead> <tbody> <tr> <td>Anthem of the Sun Grateful Dead</td><td>Death Metal</td><td>Avail. Min. Max.</td><td>5 2 11</td><td>Qty Pur. Total Nb. Sup.</td><td>0 £0 0</td><td>£11</td><td>Qty. Sold Total Nb. Cus.</td><td>0 £0 0</td></tr> <tr> <td>Bad Michael Jackson</td><td>Rock</td><td>Avail. Min. Max.</td><td>13 2 13</td><td>Qty Pur. Total Nb. Sup.</td><td>0 £0 0</td><td>£47</td><td>Qty. Sold Total Nb. Cus.</td><td>0 £0 0</td></tr> <tr> <td>Bat Out of Hell Meat Loaf</td><td>Rock</td><td>Avail. Min. Max.</td><td>7 1 19</td><td>Qty Pur. Total Nb. Sup.</td><td>0 £0 0</td><td>£47</td><td>Qty. Sold Total Nb. Cus.</td><td>0 £0 0</td></tr> <tr> <td>Berlin Lou Reed</td><td>Pop</td><td>Avail. Min. Max.</td><td>11 0 20</td><td>Qty Pur. Total Nb. Sup.</td><td>0 £0 0</td><td>£43</td><td>Qty. Sold Total Nb. Cus.</td><td>0 £0 0</td></tr> <tr> <td>Blood Sugar Sex Magik Red Hot Chilli Peppers</td><td>Pop</td><td>Avail. Min. Max.</td><td>14 1 17</td><td>Qty Pur. Total Nb. Sup.</td><td>0 £0 0</td><td>£15</td><td>Qty. Sold Total Nb. Cus.</td><td>0 £0 0</td></tr> <tr> <td>Blue Lines Massive Attack</td><td>Rock</td><td>Avail. Min. Max.</td><td>9 3 11</td><td>Qty Pur. Total Nb. Sup.</td><td>0 £0 0</td><td>£21</td><td>Qty. Sold Total Nb. Cus.</td><td>6 £126 2</td></tr> </tbody> </table>	Title	Artist	Genres	Stock Level	List	GO !			Anthem of the Sun Grateful Dead	Death Metal	Avail. Min. Max.	5 2 11	Qty Pur. Total Nb. Sup.	0 £0 0	£11	Qty. Sold Total Nb. Cus.	0 £0 0	Bad Michael Jackson	Rock	Avail. Min. Max.	13 2 13	Qty Pur. Total Nb. Sup.	0 £0 0	£47	Qty. Sold Total Nb. Cus.	0 £0 0	Bat Out of Hell Meat Loaf	Rock	Avail. Min. Max.	7 1 19	Qty Pur. Total Nb. Sup.	0 £0 0	£47	Qty. Sold Total Nb. Cus.	0 £0 0	Berlin Lou Reed	Pop	Avail. Min. Max.	11 0 20	Qty Pur. Total Nb. Sup.	0 £0 0	£43	Qty. Sold Total Nb. Cus.	0 £0 0	Blood Sugar Sex Magik Red Hot Chilli Peppers	Pop	Avail. Min. Max.	14 1 17	Qty Pur. Total Nb. Sup.	0 £0 0	£15	Qty. Sold Total Nb. Cus.	0 £0 0	Blue Lines Massive Attack	Rock	Avail. Min. Max.	9 3 11	Qty Pur. Total Nb. Sup.	0 £0 0	£21	Qty. Sold Total Nb. Cus.	6 £126 2	Create a new Album
Title	Artist	Genres	Stock Level	List	GO !																																																										
Anthem of the Sun Grateful Dead	Death Metal	Avail. Min. Max.	5 2 11	Qty Pur. Total Nb. Sup.	0 £0 0	£11	Qty. Sold Total Nb. Cus.	0 £0 0																																																							
Bad Michael Jackson	Rock	Avail. Min. Max.	13 2 13	Qty Pur. Total Nb. Sup.	0 £0 0	£47	Qty. Sold Total Nb. Cus.	0 £0 0																																																							
Bat Out of Hell Meat Loaf	Rock	Avail. Min. Max.	7 1 19	Qty Pur. Total Nb. Sup.	0 £0 0	£47	Qty. Sold Total Nb. Cus.	0 £0 0																																																							
Berlin Lou Reed	Pop	Avail. Min. Max.	11 0 20	Qty Pur. Total Nb. Sup.	0 £0 0	£43	Qty. Sold Total Nb. Cus.	0 £0 0																																																							
Blood Sugar Sex Magik Red Hot Chilli Peppers	Pop	Avail. Min. Max.	14 1 17	Qty Pur. Total Nb. Sup.	0 £0 0	£15	Qty. Sold Total Nb. Cus.	0 £0 0																																																							
Blue Lines Massive Attack	Rock	Avail. Min. Max.	9 3 11	Qty Pur. Total Nb. Sup.	0 £0 0	£21	Qty. Sold Total Nb. Cus.	6 £126 2																																																							
	Anthem of the Sun Grateful Dead	Death Metal	Avail. Min. Max.	5 2 11	Qty Pur. Total Nb. Sup.	0 £0 0	£11	Qty. Sold Total Nb. Cus.	0 £0 0	Modify	Delete																																																				
	Bad Michael Jackson	Rock	Avail. Min. Max.	13 2 13	Qty Pur. Total Nb. Sup.	0 £0 0	£47	Qty. Sold Total Nb. Cus.	0 £0 0	Modify	Delete																																																				
	Bat Out of Hell Meat Loaf	Rock	Avail. Min. Max.	7 1 19	Qty Pur. Total Nb. Sup.	0 £0 0	£47	Qty. Sold Total Nb. Cus.	0 £0 0	Modify	Delete																																																				
	Berlin Lou Reed	Pop	Avail. Min. Max.	11 0 20	Qty Pur. Total Nb. Sup.	0 £0 0	£43	Qty. Sold Total Nb. Cus.	0 £0 0	Modify	Delete																																																				
	Blood Sugar Sex Magik Red Hot Chilli Peppers	Pop	Avail. Min. Max.	14 1 17	Qty Pur. Total Nb. Sup.	0 £0 0	£15	Qty. Sold Total Nb. Cus.	0 £0 0	Modify	Delete																																																				
	Blue Lines Massive Attack	Rock	Avail. Min. Max.	9 3 11	Qty Pur. Total Nb. Sup.	0 £0 0	£21	Qty. Sold Total Nb. Cus.	6 £126 2	Modify	Delete																																																				

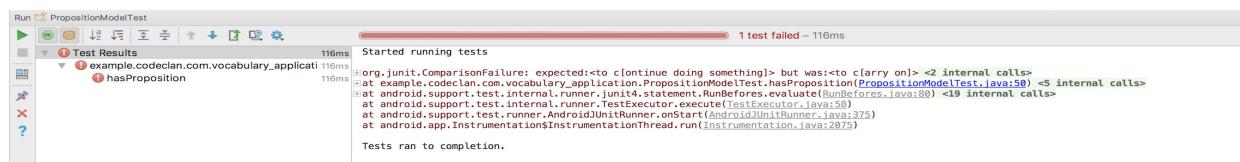
6 Week N°11

6.1 P.18

The test code is the “getProposition” method which is expected to return a proposition as a String depending on the type of question answered :

```
21     public String getProposition(){
22
23         switch(enumQuestionType){
24             case DEFINITION_WORD:
25                 this.label = this.meaningModel.getWordModel().getWordEntity().getSpelling();
26
27             case WORD_EXAMPLE:
28                 this.label = this.meaningModel.getMeaningEntity().getExample();
29
30             case EXAMPLE_WORD:
31                 this.label = this.meaningModel.getWordModel().getWordEntity().getSpelling();
32
33             case WORD_DEFINITION:
34                 this.label = this.meaningModel.getMeaningEntity().getMeaning();
35
36             default:
37                 this.label = this.meaningModel.getWordModel().getWordEntity().getSpelling();
38
39         }
40
41         return this.label;
42     }
```

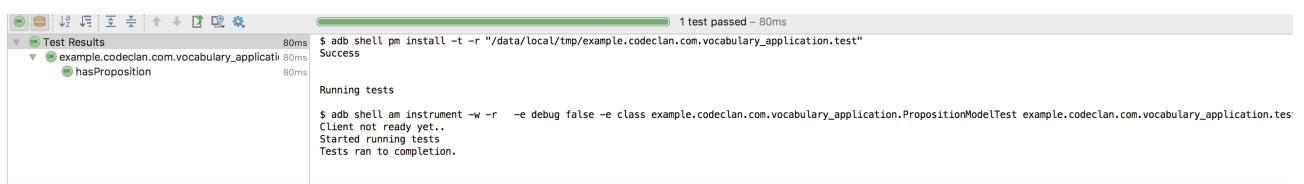
The test fails because the expected proposition does not match with the current proposition returned by the method “getProposition”



The “getProposition” method is fixed by adding the break statements which were missing for each “case” :

```
21     public String getProposition(){
22
23         switch(enumQuestionType){
24             case DEFINITION_WORD:
25                 this.label = this.meaningModel.getWordModel().getWordEntity().getSpelling();
26                 break;
27
28             case WORD_EXAMPLE:
29                 this.label = this.meaningModel.getMeaningEntity().getExample();
30                 break;
31
32             case EXAMPLE_WORD:
33                 this.label = this.meaningModel.getWordModel().getWordEntity().getSpelling();
34                 break;
35
36             case WORD_DEFINITION:
37                 this.label = this.meaningModel.getMeaningEntity().getMeaning();
38                 break;
39
40             default:
41                 this.label = this.meaningModel.getWordModel().getWordEntity().getSpelling();
42                 break;
43
44         }
45
46         return this.label;
47     }
```

The test is passing after the correction :



7 Week 12

7.1 P16

The program uses a cryptocurrency API to collect some data like the current price, the intraday volume exchanged, the last 24h fluctuation.

```
CryptoCurrencyAPI.prototype.sendRequestgetAllCurrenciesByNameOrSymbol = function(nameOrSymbol, portfolioFilter){  
    let url      = this.url+"all/coinlist";  
    let request = new XMLHttpRequest();  
    request.open("GET", url);  
    request.addEventListener("load", this.sendRequestgetAllCurrenciesByNameOrSymbolResult.bind(request,  
                                              this, nameOrSymbol, portfolioFilter));  
    request.send();  
}  
  
CryptoCurrencyAPI.prototype.sendRequestgetAllCurrenciesByNameOrSymbolResult = function(self,  
                                         nameOrSymbol,  
                                         portfolioFilter){  
  
    if(this.status === 200)  
    {  
        let JSONcurrencyList = JSON.parse(this.responseText);  
        let currencyEntities = CurrencyEntityConverter.convertJsonToCurrencyListFiltered(JSONcurrencyList,  
                                         nameOrSymbol,  
                                         portfolioFilter);  
  
        self.sendRequestGetDataCurrencyBySymbol(currencyEntities, null);  
    }  
    else  
    {  
        console.log(this.error);  
    }  
}
```

All these data provided by the API are rendered through this user interface which belongs to a portfolio management application :

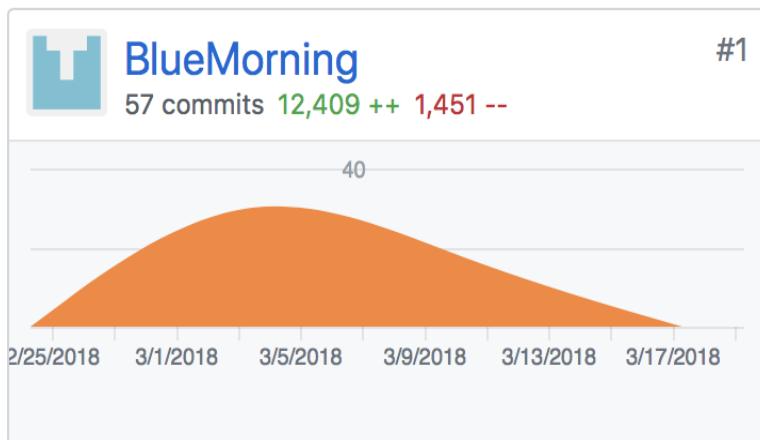
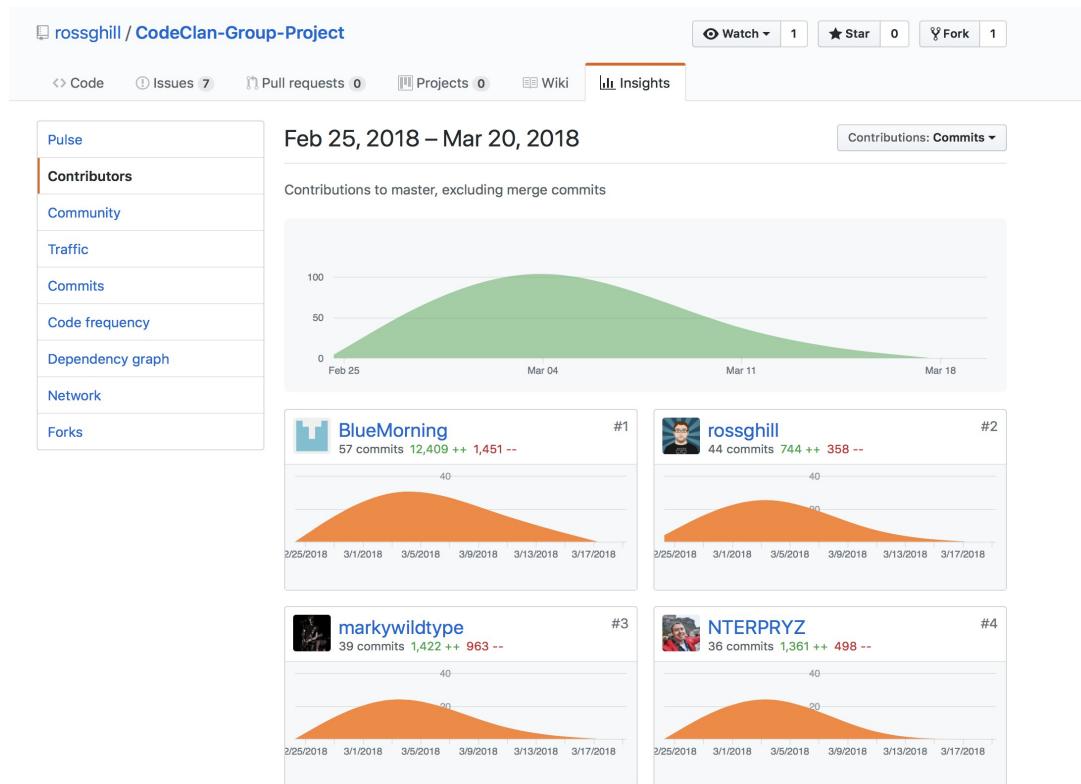
Portfolio Management											
Summary											
Symbol		Coin Name		Price	Change 24	High 24	Low 24	Quantity in portfolio	Quantity to trade	Buy	Sell
	BTC	Bitcoin		8430.84	194.07	8749.91	8126.16	1	0	<button>BUY</button>	<button>SELL</button>
	BTCA	Bitair		0.00155	-0.0002	0.00175	0.00111	1	0	<button>BUY</button>	<button>SELL</button>
	BTCD	BitcoinDark		70.08557	0.9021	71.3418	68.07060	0	0	<button>BUY</button>	<button>SELL</button>
	BTCE	EthereumBitcoin		0.00006342	0	0.00006342	0.00006342	0	0	<button>BUY</button>	<button>SELL</button>
	BTCM	BTCMoon		0.008910	0.0011	0.008910	0.007799	0	0	<button>BUY</button>	<button>SELL</button>
	BTCP	Bitcoin Private		31.4470	-0.5818	37.1800	30.7726	0	0	<button>BUY</button>	<button>SELL</button>
	BTCR	BitCurrency		0.003625	0.0019	0.003625	0.001770	0	0	<button>BUY</button>	<button>SELL</button>
	BTCRED	Bitcoin Red		0.01578	0.0004	0.01689	0.01536	0	0	<button>BUY</button>	<button>SELL</button>
	BTCRY	BitCrystal		0.000177	0	0.0002001	0.000177	0	0	<button>BUY</button>	<button>SELL</button>
	BTCS	Bitcoin Script		0.04755	0.0041	0.05059	0.03794	0	0	<button>BUY</button>	<button>SELL</button>
	BTCZ	BitcoinZ		0.003541	-0.0003	0.004047	0.003457	0	0	<button>BUY</button>	<button>SELL</button>

8 Week 14

8.1 P1

My profile is "BlueMorning" :

<https://github.com/rossghill/CodeClan-Group-Project/graphs/contributors>



8.2 P2

This brief describes the expected MVP and extensions for our Travel Packages application :

OBJECTIVE

MVP

- User can search by departure and return dates
- User can view available flight and hotel options for their dates
- User can sort flight & hotel packages by price
- User can add packages to a favourites list

EXTENSIONS

- Filter results by various criteria
- Show large map and mini map
- Modal UI for displaying favourite packages
- Add user profile account option

8.3 P3

This is the Trello MosCow board of our “Travel Packages” application :

The Trello board is organized into four columns based on priority:

- Must** (Green):
 - Search with origin, destination, departure/return dates, number of adults/children
 - Display results as flight/hotel packages each with total price
 - Sort results by total price
 - Save package details to a favourites list
 - Delete packages from favourites list
- Should** (Orange):
 - Filter results according to budget
 - Sort results by hotel rating
 - Display only top 10 results (though all results should be returned for filtering/sorting purposes)
 - Autocomplete airport info in origin/destination fields
- Could** (Yellow):
 - Modify packages within favourites
 - Multiple result views: List, panel, map
 - Background image that changes every 10(?) seconds
 - Log a basic user profile to save packages under
 - Detailed information on a package - Modal?
 - Google map for hotel location
 - 'Best deals today' search
- Won't (for now)** (Purple):
 - Have booking forwarding functionality
 - Refresh packages saved to favourites according to updates in the API

Each column has an "Add a card..." button at the bottom.

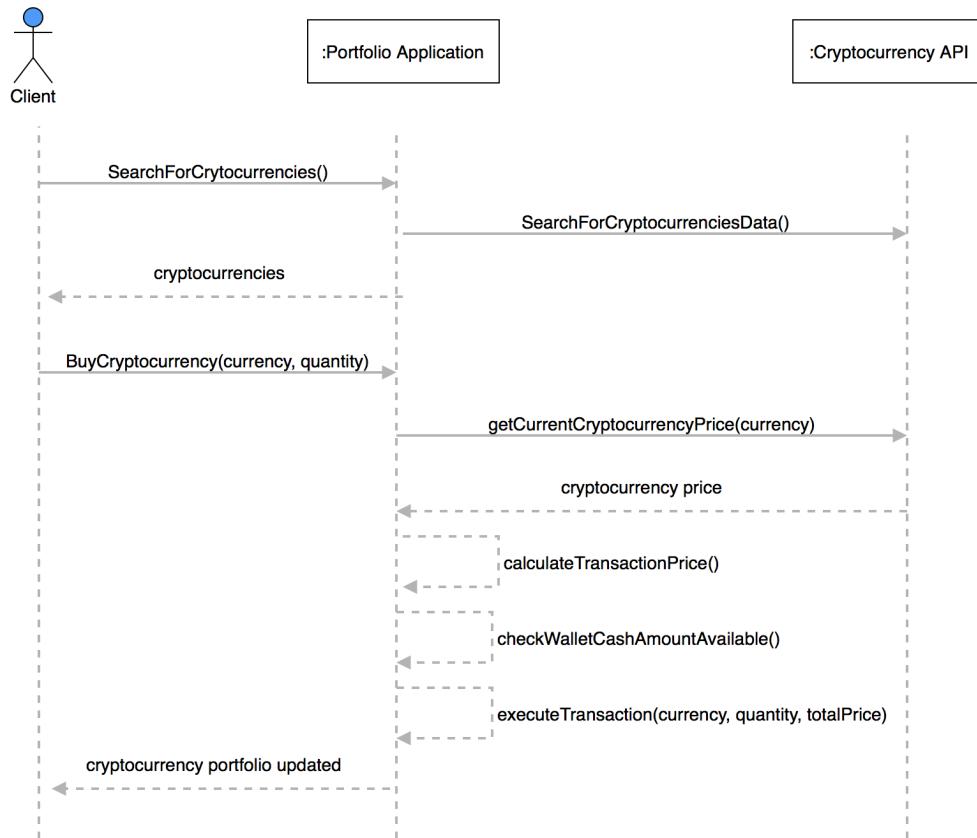
8.4 P4

Acceptance criteria	Expected Result/Output	Pass/Fail
A user is able to search for travel packages.	A list of travel packages is displayed to the user.	Passed.
A user can refine his searching criteria by package prices.	The list of travel packages is updated to match with the filter on price.	Failed.
A user can add a travel package to his favourite.	The travel package is added to the list of favourite of the user.	Passed.
A user can remove a travel package from his favourite	The travel package is removed from the list of favourite of the user.	Passed.
A user can select the display mode "map"	The list of travel packages is displayed on a GoogleMap.	Passed.
A user can browser his list of favourite travel packages.	The list of travel packages is displayed within a modal window.	Failed.
A user can set the number of adults and children who are going to travel.	The search bar for travel package displayed those filters and the search matches with them.	Passed.

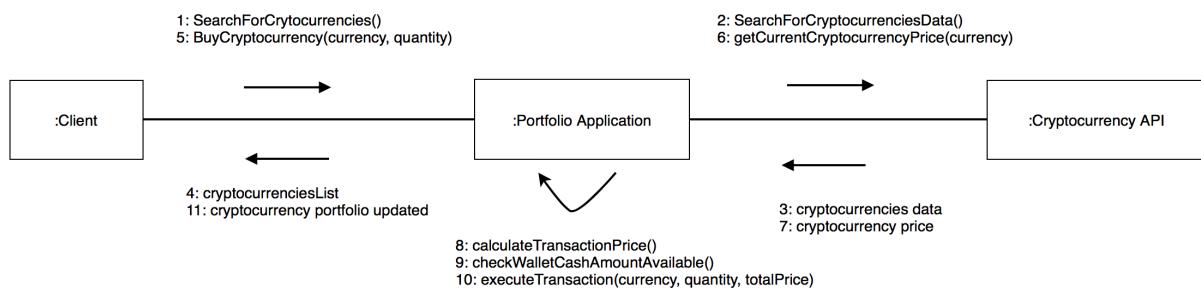
8.5 P7

8.5.1 Sequence diagram

This sequence diagram describes the process of buying cryptocurrencies through the portfolio application.



8.5.2 Collaboration diagram

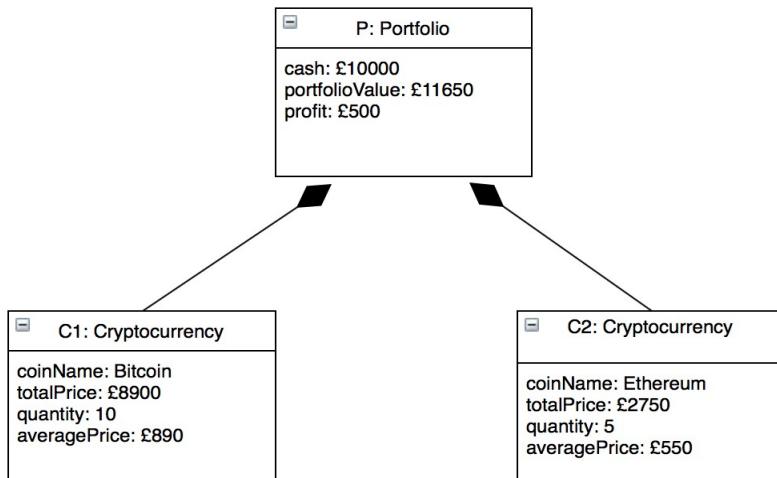


The collaboration diagram describes the objects committed in the process of buying cryptocurrency through the portfolio application.

8.6 P8

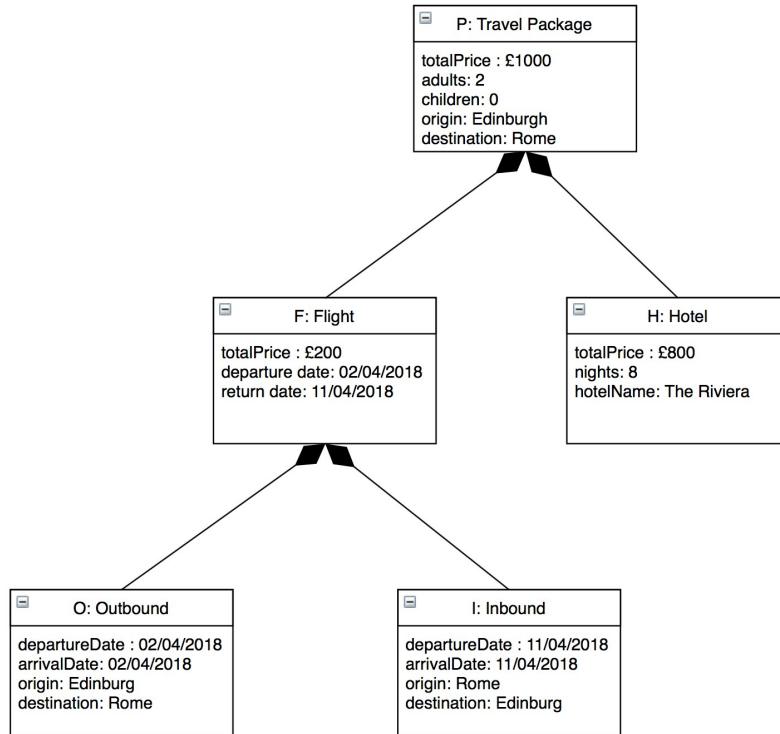
8.6.1 Object diagram N°1

This object diagram is a representation of a portfolio which contains 2 cryptocurrencies.



8.6.2 Object diagram N°2

This object diagram represents a travel package made of a flight return and a hotel booking.



8.7 P9

8.7.1 Algorithm N°1

```
sendRequestGetCurrencyDataList(currencyEntities){

    this.currencyAPIRequest.onRequestGetCurrencyDataList = this.requestGetCurrencyDataListDone.bind(this);

    let coinSymbols = "";
    currencyEntities.forEach((currency) => {
        if((coinSymbols + currency.coinSymbol).length < 300)
        {
            coinSymbols += currency.coinSymbol+",";
        }
    })

    if(coinSymbols != null && coinSymbols != ""){
        coinSymbols = coinSymbols.substring(0, coinSymbols.length-1);
    }

    this.currencyAPIRequest.requestCurrencyDataList(coinSymbols);
}
```

This algorithm aims at building the API query and call IT to get the current currency values. As this API only accepts a list of coin symbols as a String whose length is smaller than 300 characters then I need to check if the String length is short enough to add a new coin symbol. Then the call to the API can be made without taking the risk to exceed its limit of 300 characters.

8.7.2 Algorithm N°2

```
searchForCurrencyDataList(coinNameFilter, isLockOnPortfolio){

    this.coinNameFilter = coinNameFilter;
    this.isLockOnPortfolio = isLockOnPortfolio;

    this.databasePortfolioModel.checkCurrencyReferencesExist((isReferences) => {
        if(! isReferences){
            this.currencyAPIRequest.onRequestGetAllCurrenciesDone = this.request GetAllCurrenciesDone.bind(this);
            this.currencyAPIRequest.requestAllCurrencies();
        }
        else{
            this.databasePortfolioModel.getCurrenciesReferencesByCoinName(this.coinNameFilter,
                this.isLockOnPortfolio,
                this.resultLimit, (currencyList) => {
                    this.currenciesList = currencyList;
                    this.sendRequestGetCurrencyDataList(this.currenciesList);
                })
        }
    })
}
```

This algorithm aims at returning all the coins whose names match with the name filter passed as a parameter. If the coin list does not exist yet in the database then a method is called before executing the search in order to populate the database with the reference of all the coins. Then, the search is always performed on a list of references which exists in the database.

8.8 P17

Intent	Result	Action undertaken	Result again
Perform a search on coin names with "Bitcoin".	Failed. No results found.	Make the search case insensitive to be independent of lowercase and uppercase.	Passed. The coins whose names start with "Bitcoin" are found.
Buy a quantity "n" of coins which does not exist in the portfolio.	Passed. The quantity "n" has been added to the portfolio.		
Sale a quantity "n" of coins.	Failed. The quantity "n" has been removed from the portfolio but the amount of cash available in the wallet has not been increased.	Couple the actions : sell and wire the money from the sale to the wallet cash amount.	Passed.
Buy a quantity "n" of coins which already exists in the portfolio.	Failed. The quantity already present in the portfolio should be increased by "n" while a new line has been created in the portfolio.	Check whether the coin line already exists in the portfolio : If it does then update the quantity otherwise insert a new line in the portfolio.	Passed.
Activate the mode "LiveData"	Passed. The current values of coins are refreshed automatically.		
Activate the mode "Lock on portfolio"	Failed. The coins displayed should only be those from the user's portfolio.	Add a boolean as a new parameter on the query which gets back the coins to check whether those coins are present in the user's portfolio.	Passed. When the mode "Lock on portfolio" is activated then the coins displayed are those from the user's portfolio only.

8.9 I&T

Please check https://github.com/BlueMorning/Eric_Carles_E18_PDA for the Task B.

The unit tests passing :

```
→ js_calculator_start_point git:(master) ✘ npm test
> js_calculator_start_point@1.0.0 test /Users/horizon/Documents/codeclan_work/Eric_Carles_e18_PDA/testing_task_B/js_calculator_start_point
> mocha tests/unit/calculator_spec.js

calculator
  ✓ it has a sample test
  ✓ should be able to add a number
  ✓ should be able to subtract a number
  ✓ should be able to multiply a number
  ✓ should be able to divide a number
  ✓ should be able to click on a number
  ✓ should be able to click on an operator
  ✓ should be able to clear a click on an operator
  ✓ should be able to perform an addition
  ✓ should be able to perform a subtraction
  ✓ should be able to perform a multiplication
  ✓ should be able to perform a division
  ✓ should be able to concatenate multiple number button clicks
  ✓ should be able to chain multiple operations together
  ✓ should be able to clear the running total without affecting the calculation
  ✓ should not be possible to divide by 0

16 passing (7ms)
```

The integration tests passing :

```
→ js_calculator_start_point git:(master) ✘ npm run protractor
> js_calculator_start_point@1.0.0 protractor /Users/horizon/Documents/codeclan_work/Eric_Carles_e18_PDA/testing_task_B/js_calculator_start_point
> protractor conf.js

(node:88523) [DEP0022] DeprecationWarning: os.tmpDir() is deprecated. Use os.tmpdir() instead.
[14:15:17] I/direct - Using ChromeDriver directly...
[14:15:17] I/launcher - Running 1 instances of WebDriver

  ✓ calculator functionality should have working number buttons: 77ms
  ✓ calculator functionality should be able to perform an addition: 254ms
  ✓ calculator functionality should be able to perform a subtraction: 200ms
  ✓ calculator functionality should be able to perform a multiplication: 211ms
  ✓ calculator functionality should be able to perform a division: 222ms
  ✓ calculator functionality should be able to concatenate multiple number button clicks: 177ms
  ✓ calculator functionality should be able to chain multiple operations together: 295ms
  ✓ calculator functionality should be able to clear the running total without affecting the calculation: 406ms
  ✓ calculator functionality should accept large number: 424ms
  ✓ calculator functionality should not be possible to divide by 0: 161ms

10 passing (3s)

[14:15:22] I/launcher - 0 instance(s) of WebDriver still running
[14:15:22] I/launcher - chrome #01 passed
```

Acceptance criteria	Expected Result/Output	Pass/Fail
The user can perform an addition : $3+7=$	The displayed result must be = 10 Output : 10.	Pass
The user can perform a subtraction : $12-4=$	The displayed result must be = 8. Output : 8.	Pass
The user can perform a multiplication : $3*5=$	The displayed result must be = 15. Output : 15.	Pass
The user can perform a division : $21/3=$	The displayed result must be = 7. Output : 7.	Pass
The user can clear the last operation : $2+4+3+\text{clear}=$	The displayed result must be = 6. Output : 6.	Pass
The user can perform a chain of operations : $2+4/2-1=$	The displayed result must be = 2. Output : 2.	Pass
The user can perform operations with positive numbers : $2+4 =$	The displayed result must be = 6. Output : 6.	Pass
The user can perform operations with negative numbers : $-2-4 =$	The displayed result must be = -6. Output : -2.	Fail. It's not possible to enter the first number as negative.
The user can perform operations with float numbers : $1.5+2.5 =$	The displayed result must be = 4 Output : 3.	Fail. It's not possible to enter a float number.
The user can perform operations with large numbers : $99999999+1 =$	The displayed result must be = 10 000 000.	Pass
The user should not be able to divide by 0. $4/0 :$	The displayed result should be = 0 and the division by 0 should be clear to let the user try again. Output : "Infinity"	Fail.