

PDA : Software development

ERIC CARLES – 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

### 1.3 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
-
```

## 1.4 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" => 52481},
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)

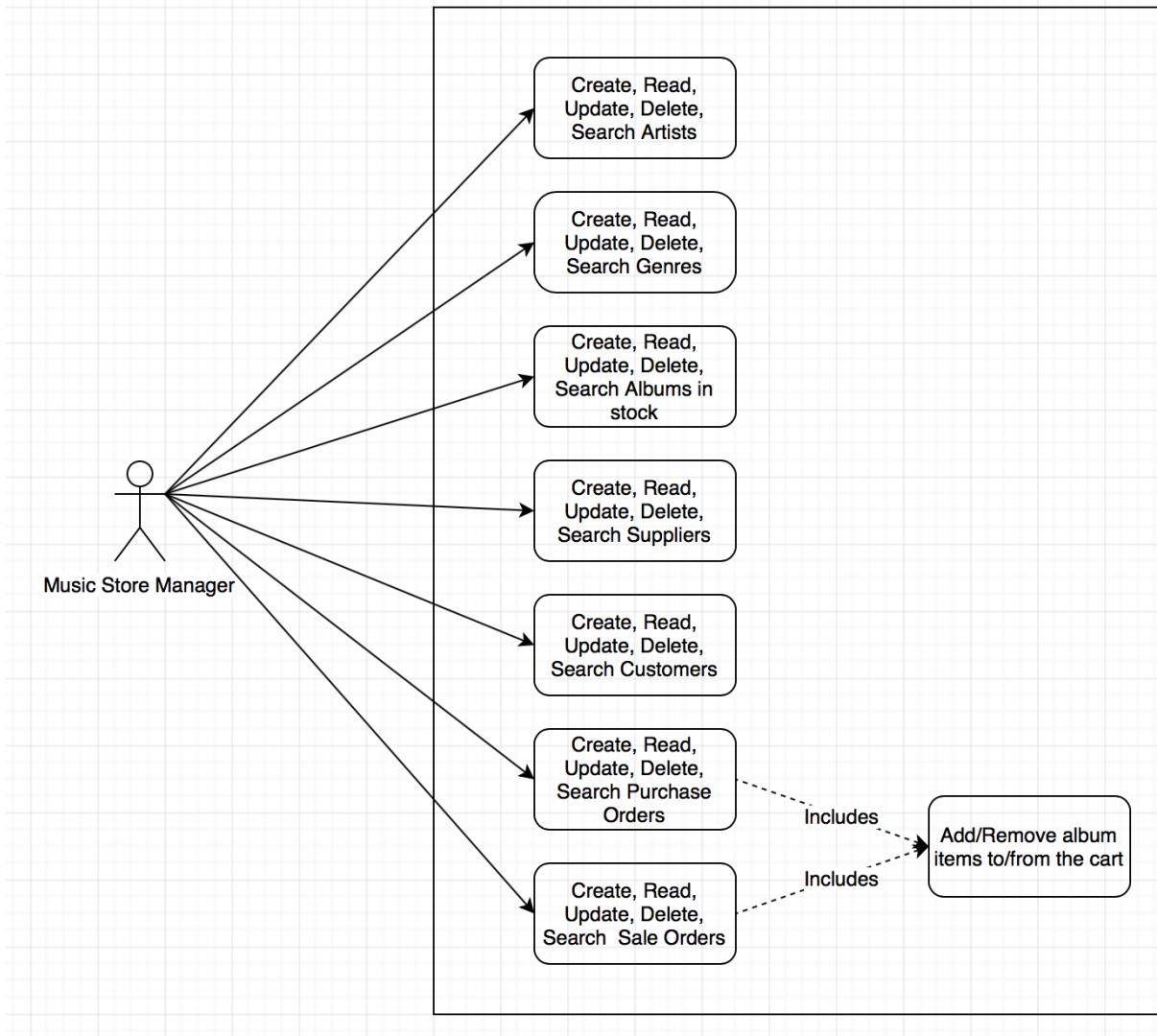
```

```
[→ 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

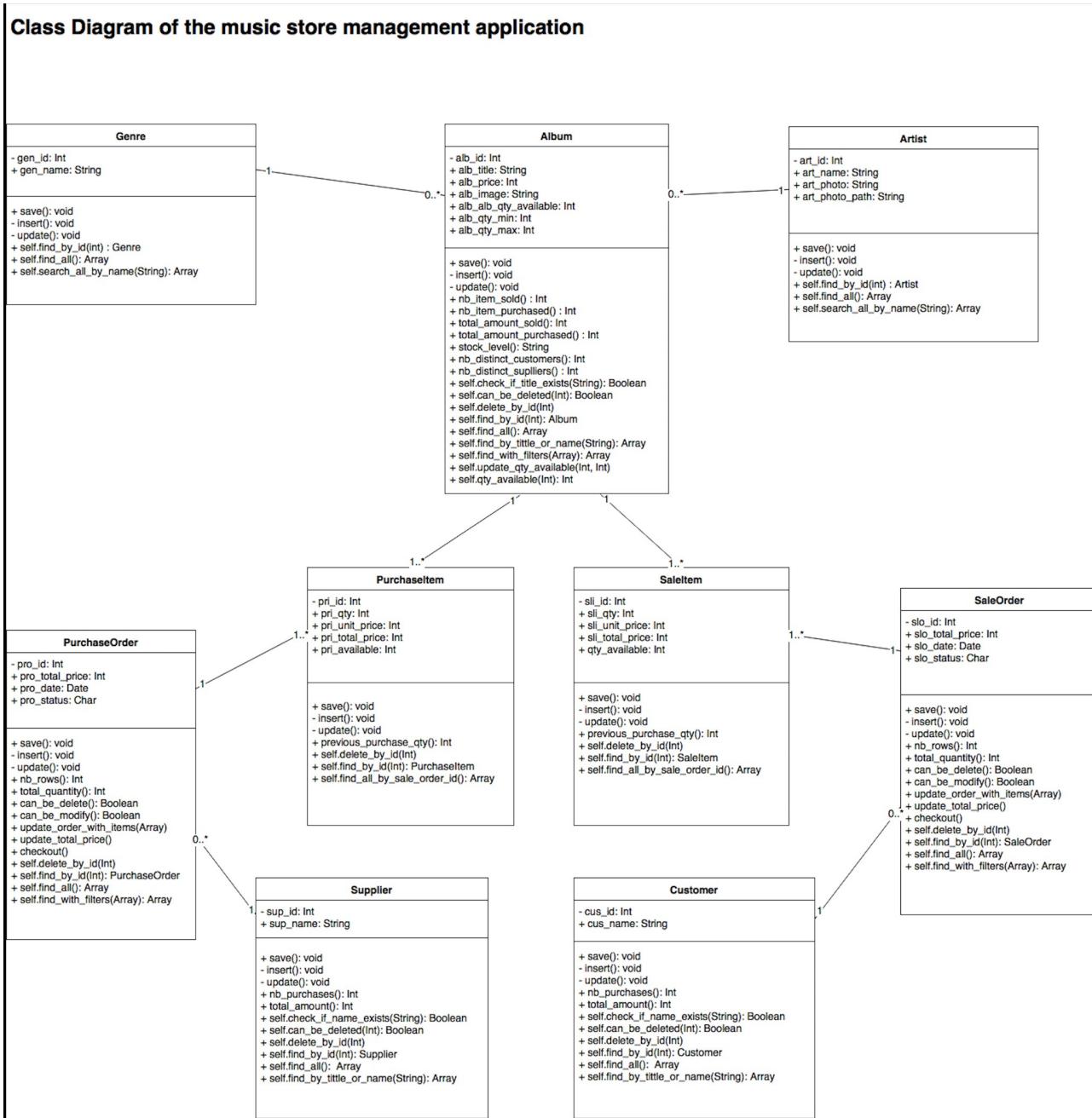
#### 1.5 A.D 1

#### Use Cases for the manager of a music store

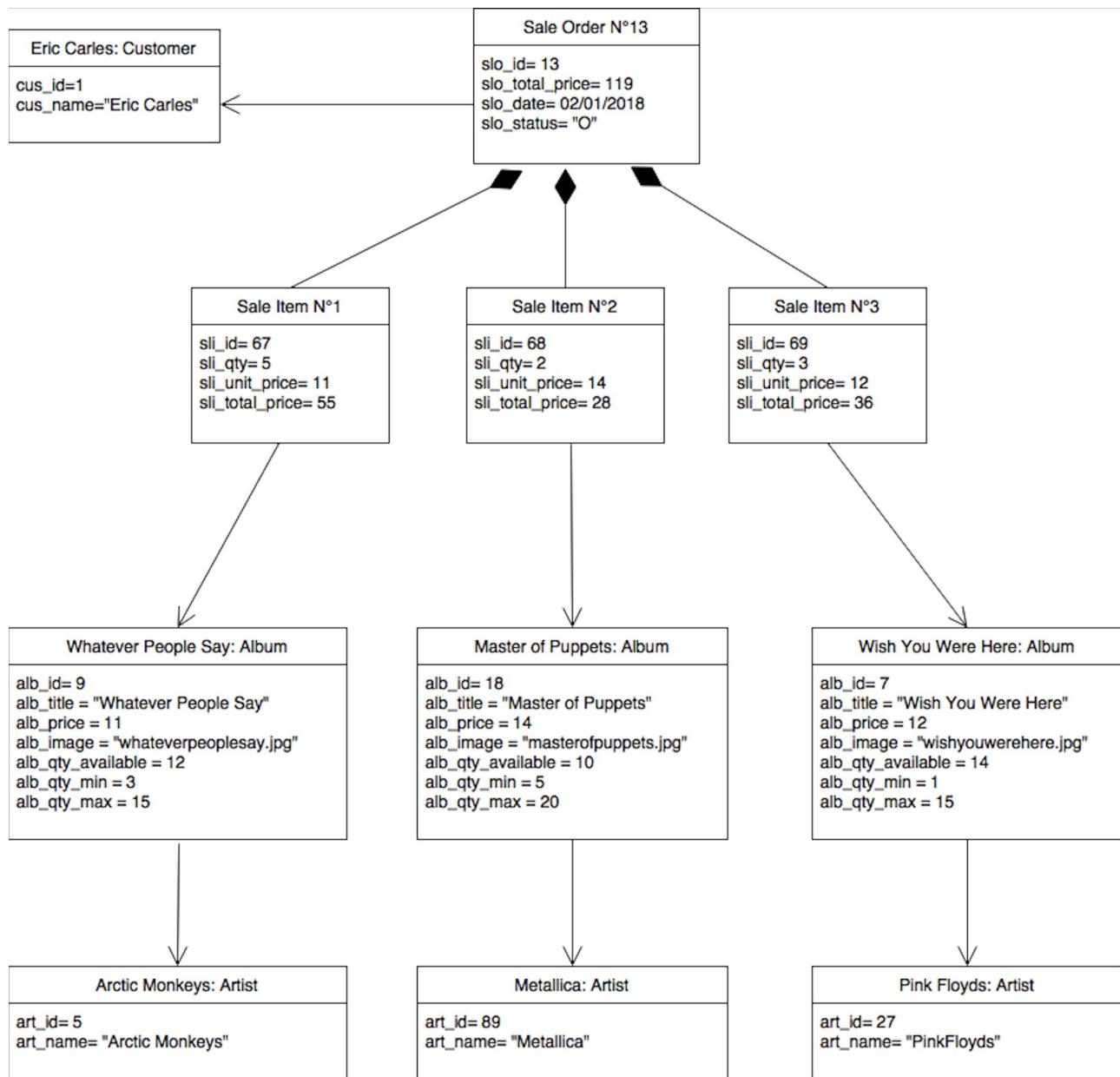


# 1.6 A.D 2

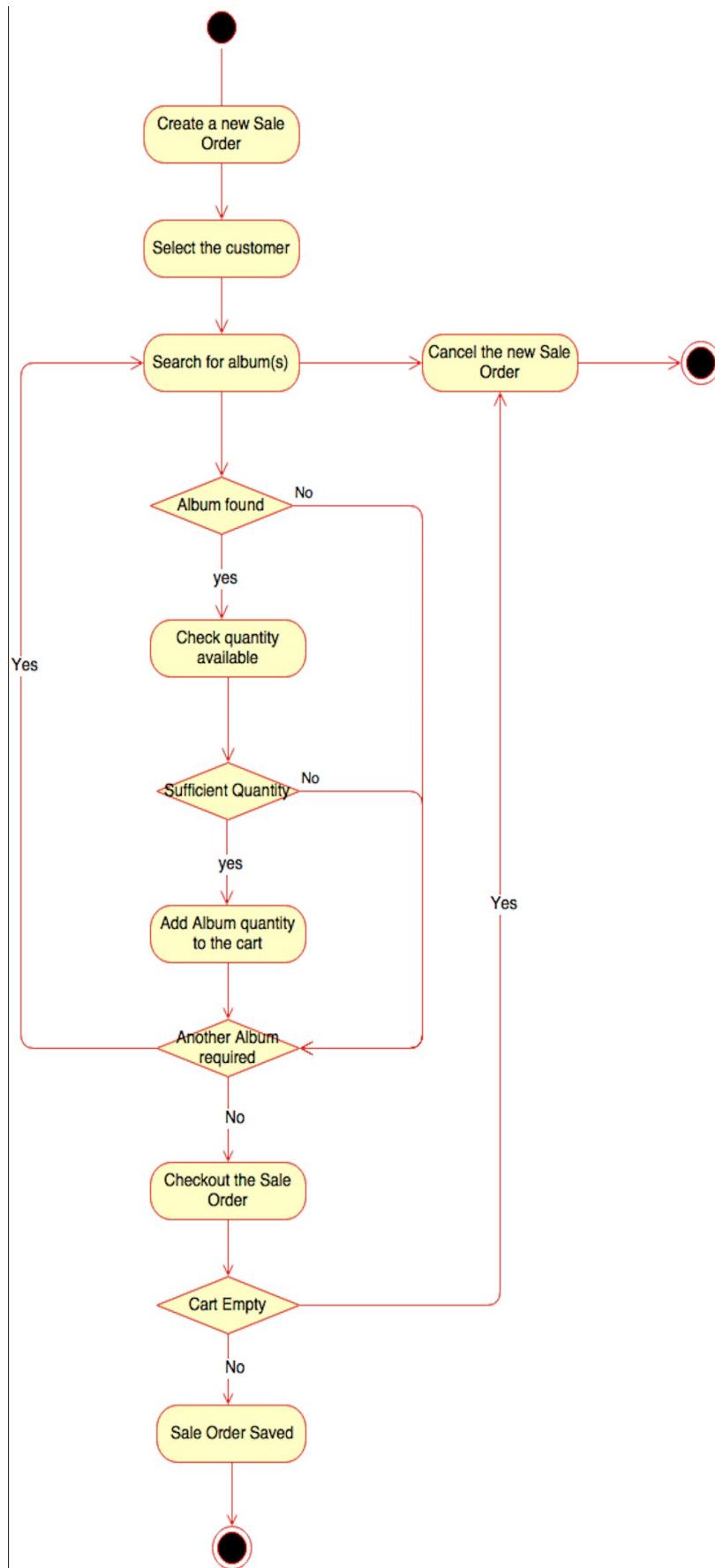
**Class Diagram of the music store management application**



## 1.7 A.D 3

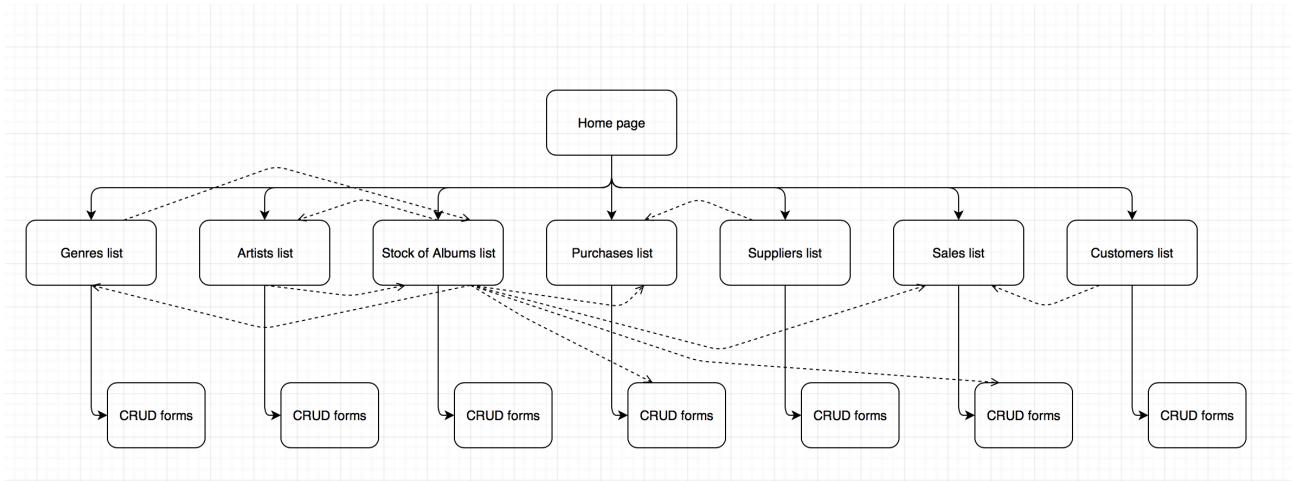


## 1.8 A.D 4



1.9 A.D 6

## 1.10 P 5





1.12 P 10

# 1.13 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 :

<a href="#">Genres</a>	<a href="#">Artists</a>	<a href="#">Albums</a>	<a href="#">Customers</a>	<a href="#">Suppliers</a>	<a href="#">Sale Orders</a>	<a href="#">Purchase Orders</a>
		<a href="#">Albums</a>				
			<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	<a href="#">Modify</a>	<a href="#">Delete</a>

## 1.14 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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# 1.15 P 15

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

<a href="#">Genres</a>	<a href="#">Artists</a>	<a href="#">Albums</a>	<a href="#">Customers</a>	<a href="#">Suppliers</a>	<a href="#">Sale Orders</a>	<a href="#">Purchase Orders</a>
<a href="#">Albums</a> <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 !"/> <a href="#">Create a new Album</a>						
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 :

<a href="#">Genres</a>	<a href="#">Artists</a>	<a href="#">Albums</a>	<a href="#">Customers</a>	<a href="#">Suppliers</a>	<a href="#">Sale Orders</a>	<a href="#">Purchase Orders</a>
<a href="#">Albums</a> <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 !"/> <a href="#">Create a new Album</a>						
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

## 1.16 I.T Task A