Topic : Online Bill and Event Reminder System

Group no : MLB_WE_01.01_G1_08

Campus : Malabe / Metro / Matara / Kandy / Kurunegala / Kandy / Jaffna

Submission Date : 19 /05/2022

We declare that this is our own work and this Assignment does not incorporate without acknowledgment any material previously submitted by anyone else in SLIIT or any other university/Institute. And we declare that each one of us equally contributed to the completion of this Assignment.

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Online Bill and Event Reminder System

Customer can visit the system. In system view various payment services. These are insurance, utility and mobile. If customer prefer to pay bills, then the customer has to register to the system. At the registration, customer enters their details and accept the terms and conditions. Registered customer is a customer. Then registered customer can add to favourites. These are mobile bills, electricity bills and water bills. Also registered customer can add reminders and remove reminders. If registered customer wants to changed account details, then they can update the profile. Furthermore, registered customer can make bill payments by visa, master, or PayPal. Customer care person contact customers, create reports, and provide information and solutions. When customer care person contacts with customers, these customers give feedbacks via messages or via emails or via calls. Web developer is a kind of customer care person. Web developer can monitor website traffic, troubleshoot web site problems, changed web site structure, maintain website and update website. Administrator is a kind of web developer. Administrator can manage payment services, add new events, remove events and update database. If need to change user access, then the administrator can manage users by add users and remove users.

Classes:

1. Customer
2. Registered Customer
3. Customer Care Person
4. Web Developer
5. Administrator
6. Bill
7. Event
8. Payment

CRC Cards

1.

Customer Class	
Responsibilities	**Collaborations**
• Visit the system	

2.

Registered Customer Class	
Responsibilities	**Collaborations**
• Register Details	
• Pay bills	Bill class
• Visit the system	
• Add favourites	Bill class
• Add reminders	Bill class, Event class
• Remove reminders	Bill class, Event class
• Update profile	
• Give feedbacks	Customer care person class

3.

Customer Care Person Class	
Responsibilities	**Collaborations**
• Contact customers	Customer class, Registered Customer class
• Create reports	Bill class, Event class
• Provide information	
Provide solution	

4.

Web developer Class	
Responsibilities	**Collaborations**
• Contact customers • Create reports • Provide information • Provide solutions • Monitor website traffic • Troubleshoot website problems • Change website structure • Maintain website • Update website	Customer class, Registered Customer class Bill class, Event class

5.

Administrator Class	
Responsibilities	**Collaborations**
• Contact customers • Create reports • Provide information • Provide solutions • Monitor website traffic • Troubleshoot website problems • Change website structure • Maintain website • Update website • Manage payment services • Add and remove events • Update database • Manage user access	Customer class, Registered Customer class Bill class, Event class Payment class Event class

6.

Bill Class	
Responsibilities	**Collaborations**
• Details of bills	

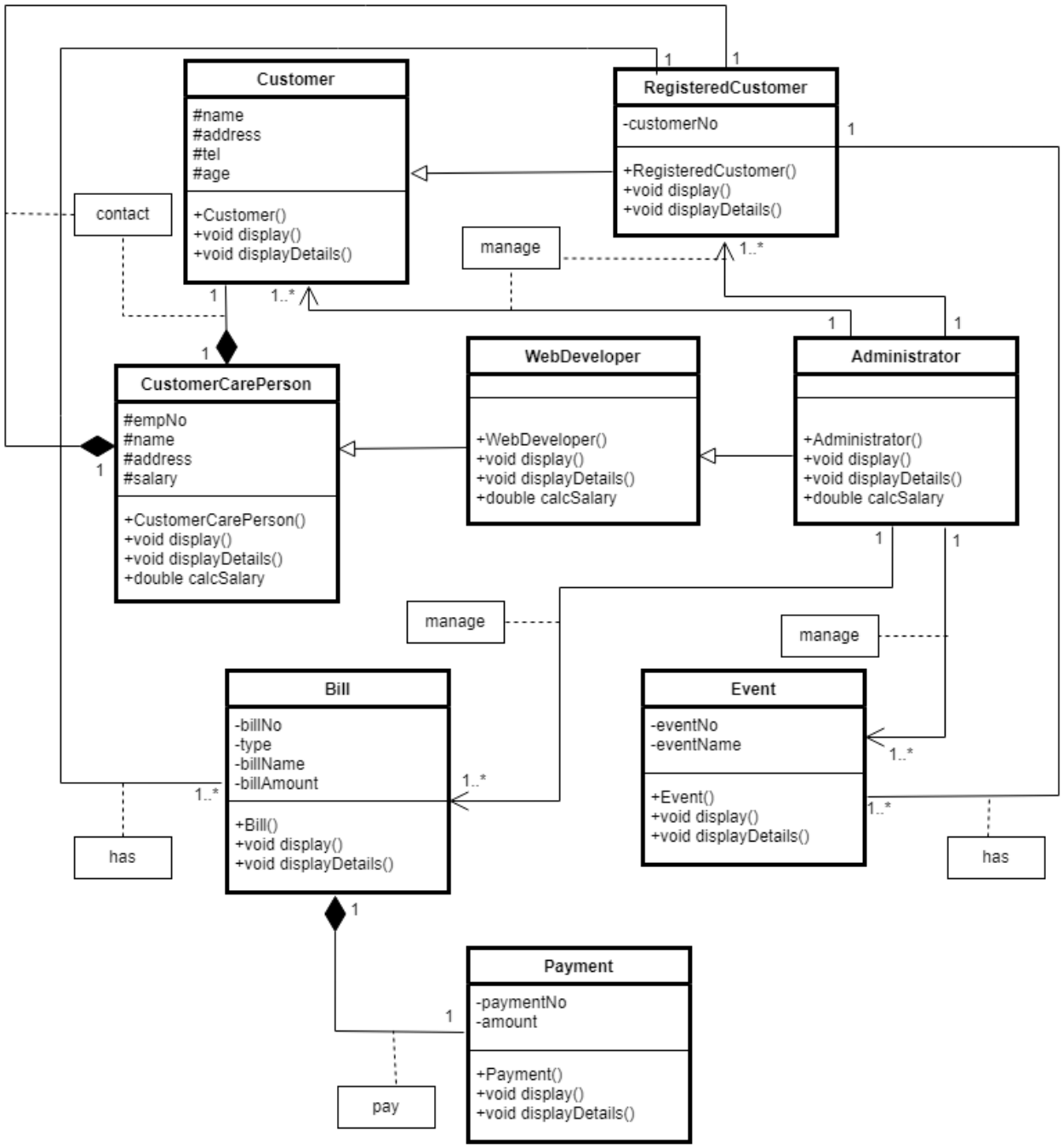
7.

Event Class	
Responsibilities	**Collaborations**
• Details of events	

8.

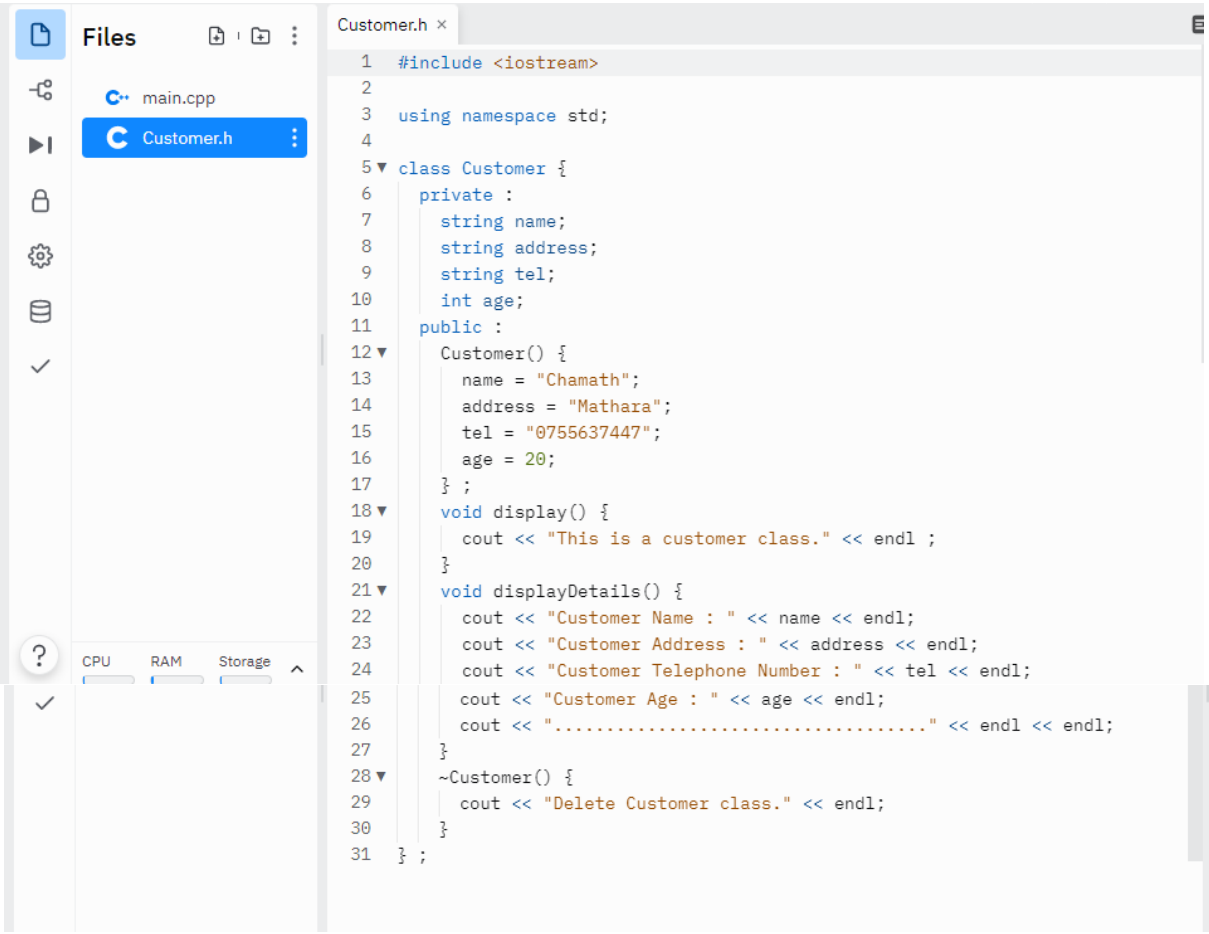
Payment Class	
Responsibilities	**Collaborations**
• Details of payments • Validate of payments	

Exercise: 01

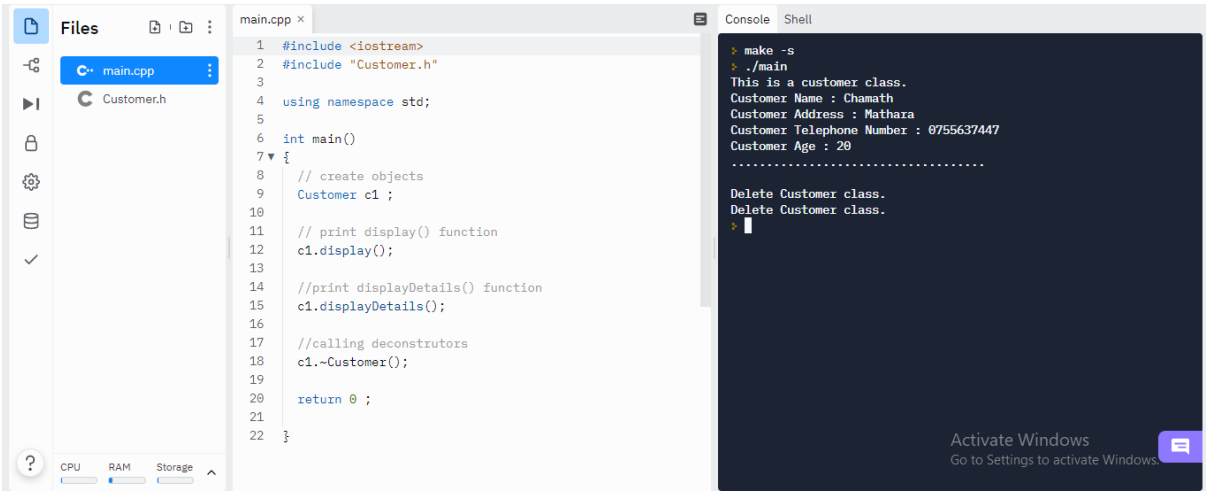

Customer
#name
#address
#tel
#age
+Customer()
+void display()
+void displayDetails()
RegisteredCustomer
-customerNo
+RegisteredCustomer()
+void display()
+void displayDetails()
contact
manage
1
1..*
CustomerCarePerson
#empNo
#name
#address
#salary
+CustomerCarePerson()
+void display()
+void displayDetails()
+double calcSalary
WebDeveloper
+WebDeveloper()
+void display()
+void displayDetails()
+double calcSalary
Administrator
+Administrator()
+void display()
+void displayDetails()
+double calcSalary
manage
manage
Bill
-billNo
-type
-billName
-billAmount
+Bill()
+void display()
+void displayDetails()
Event
-eventNo
-eventName
+Event()
+void display()
+void displayDetails()
has
has
Payment
-paymentNo
-amount
+Payment()
+void display()
+void displayDetails()
pay

Exercise: 02

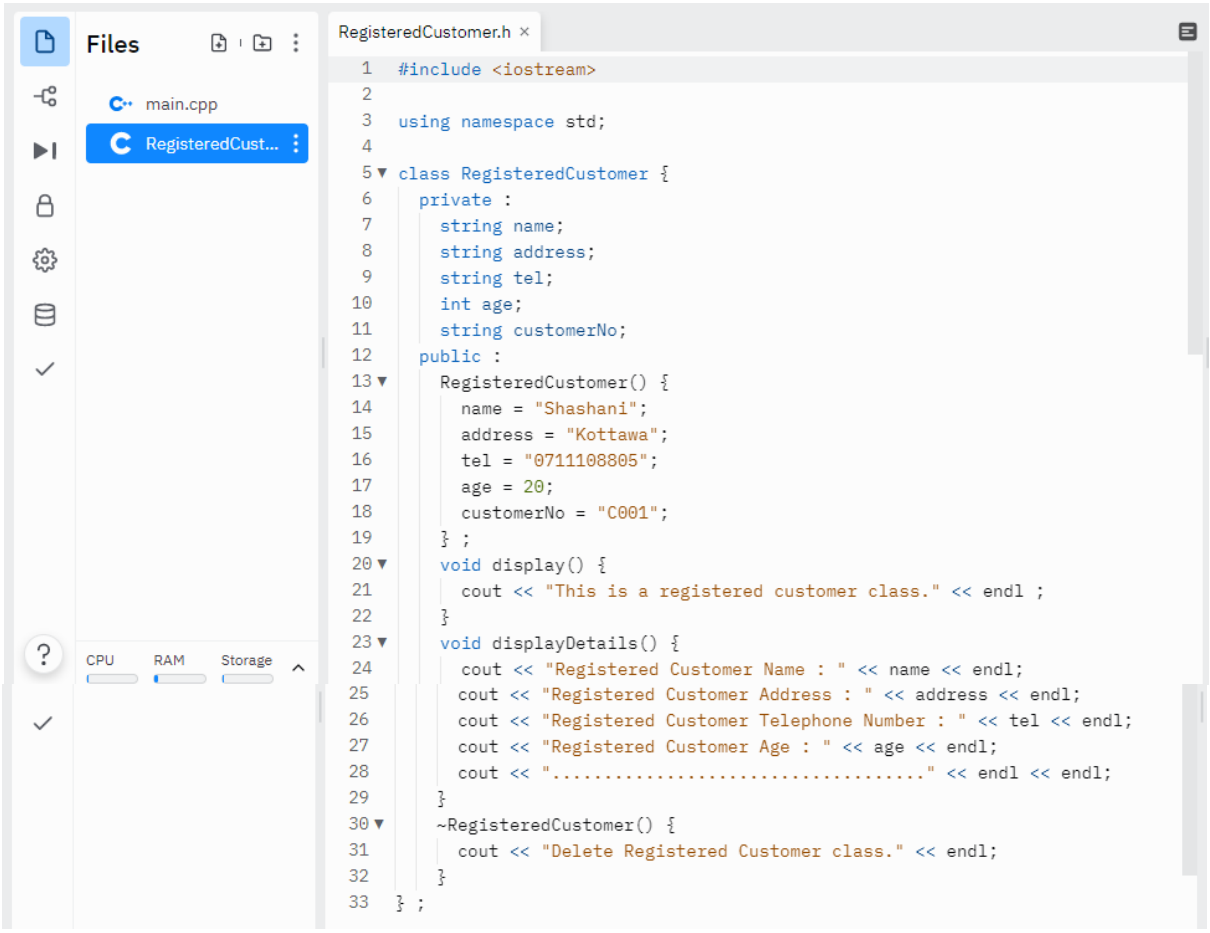
01. Customer.h file (created by Kariyapperuma K A D C A)



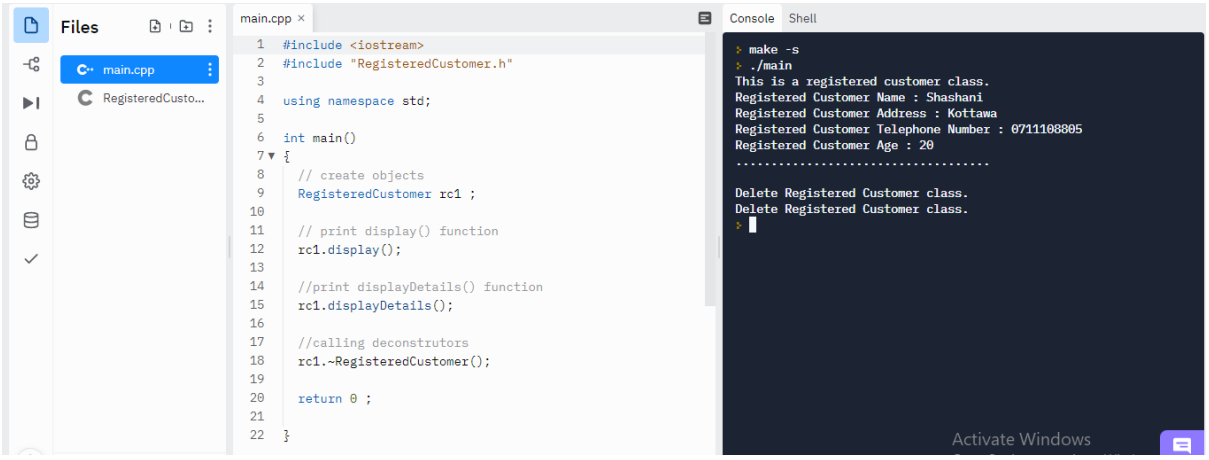
Customer.cpp file (created by Kariyapperuma K A D C A)



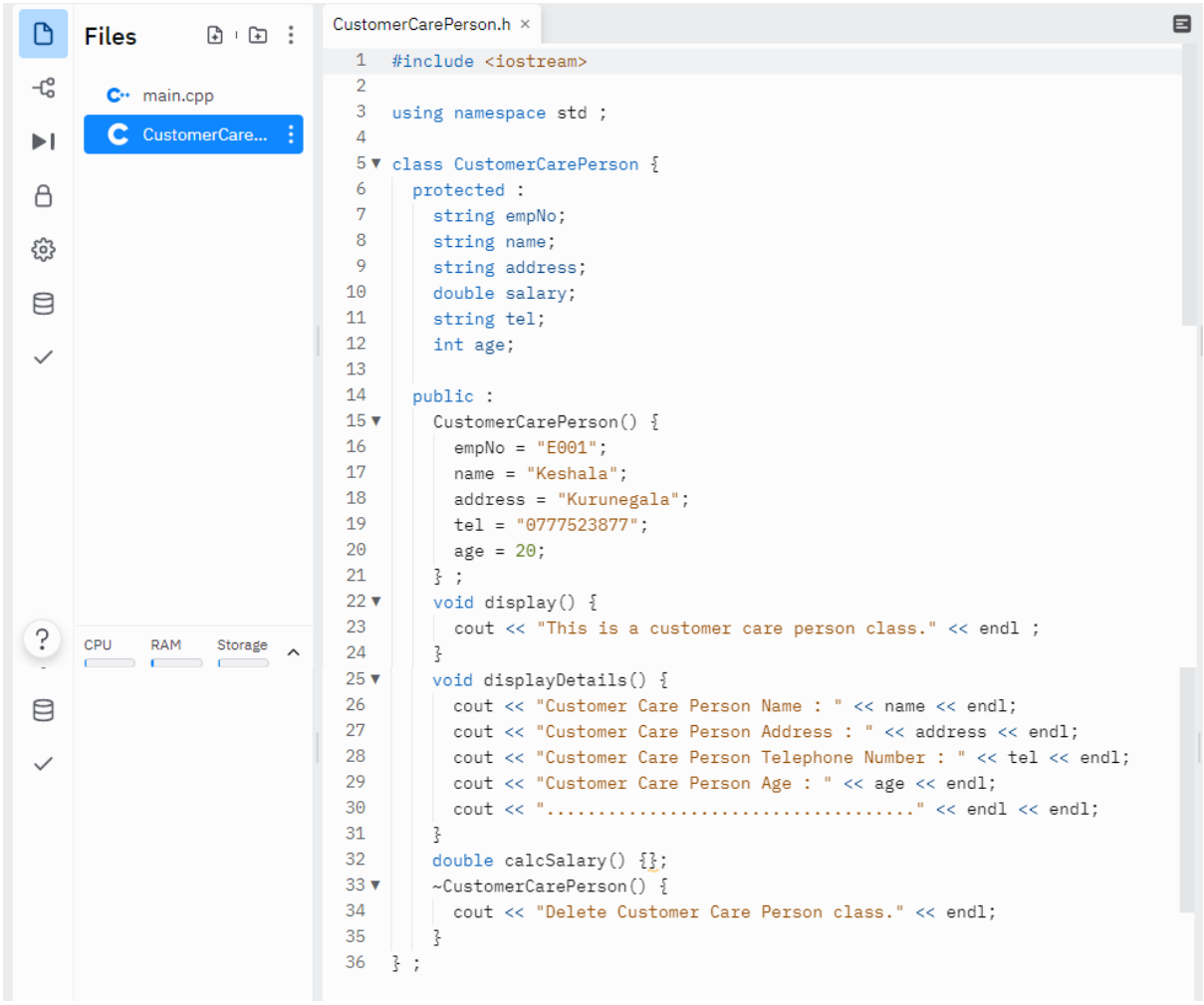
02. RegisteredCustomer.h file (created by Ruhunage S D P R)



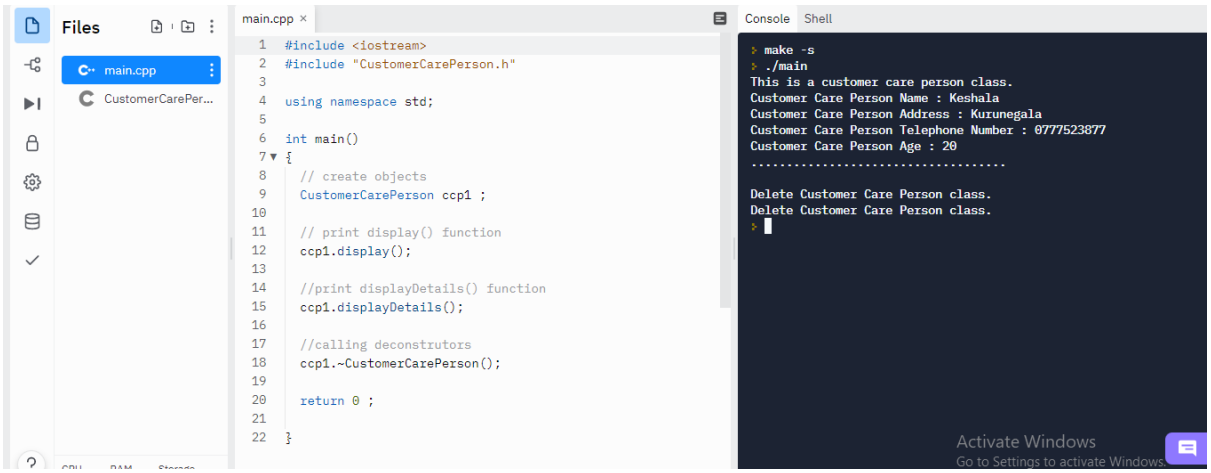
RegisteredCustomer.cpp file (created by Ruhunage S D P R)



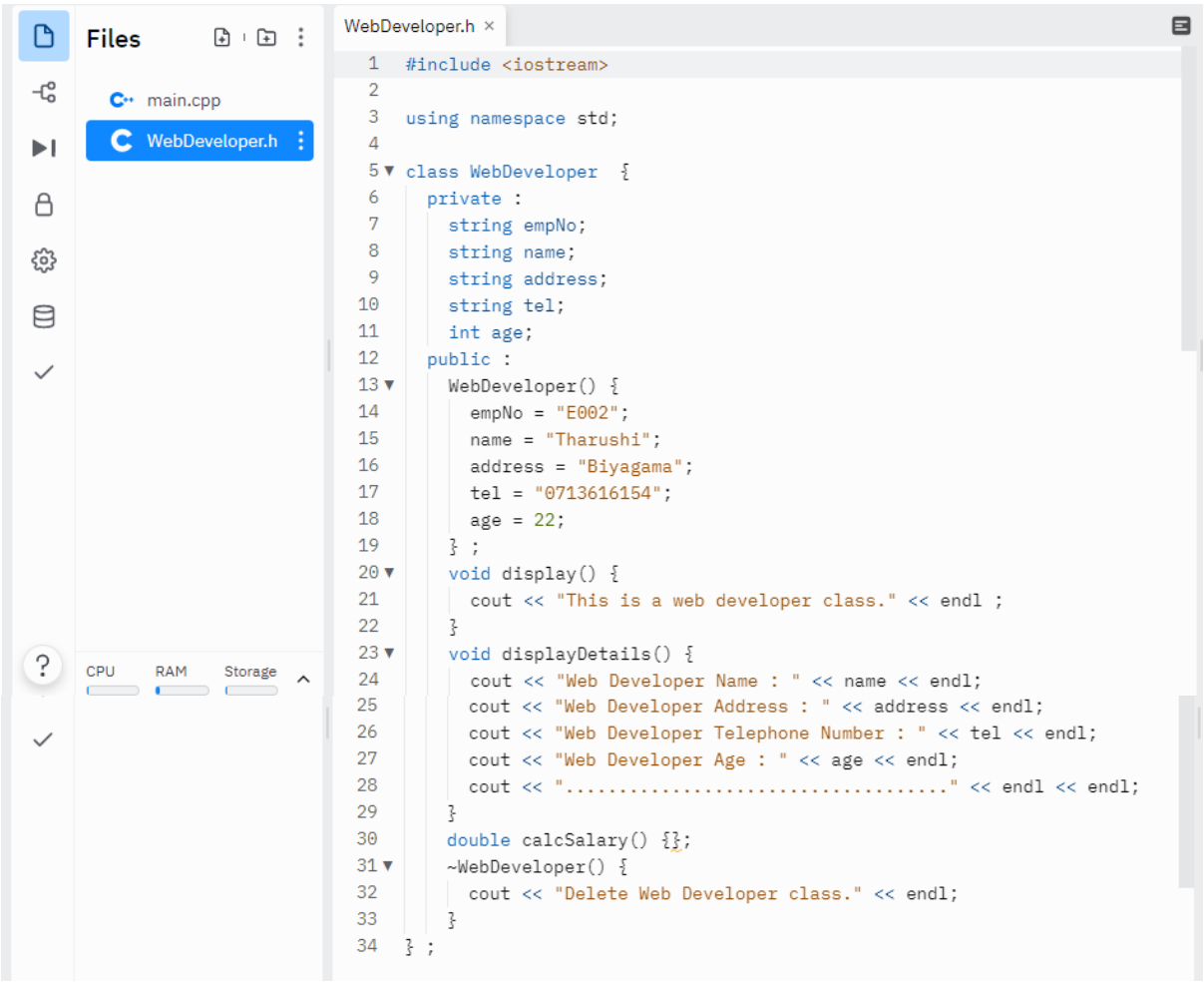
03. CustomerCarePerson.h file (created by Thathsarani H A N N)



CustomerCarePerson.cpp file (created by Thathsarani H A N N)

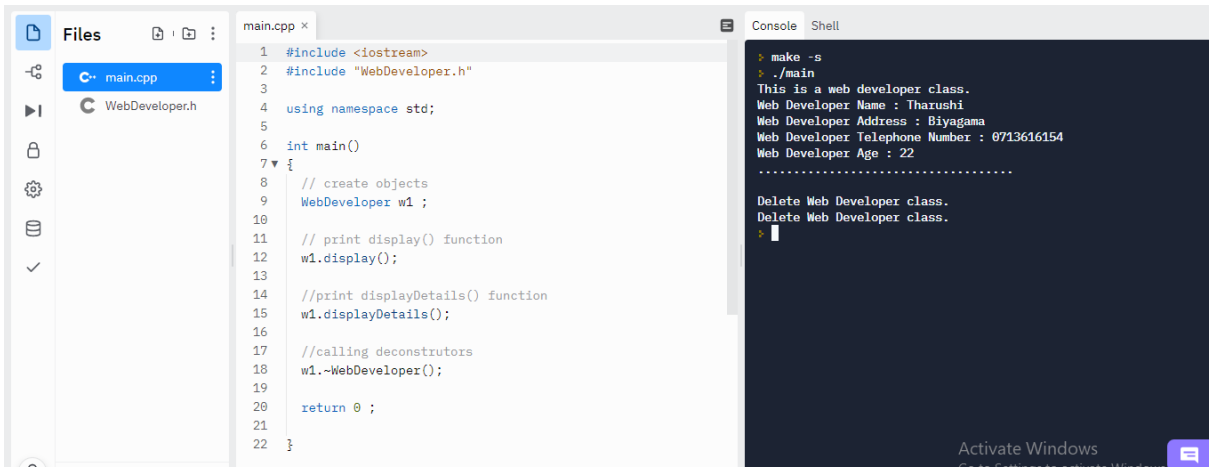


04. WebDeveloper.h file (created by Dilrukshi A G T)



```
#include <iostream>

using namespace std;

class WebDeveloper  {
  private :
    string empNo;
    string name;
    string address;
    string tel;
    int age;
  public :
    WebDeveloper() {
      empNo = "E002";
      name = "Tharushi";
      address = "Biyagama";
      tel = "0713616154";
      age = 22;
    } ;
    void display() {
      cout << "This is a web developer class." << endl ;
    }
    void displayDetails() {
      cout << "Web Developer Name : " << name << endl;
      cout << "Web Developer Address : " << address << endl;
      cout << "Web Developer Telephone Number : " << tel << endl;
      cout << "Web Developer Age : " << age << endl;
      cout << "....................................." << endl << endl;
    }
    double calcSalary() {};
    ~WebDeveloper() {
      cout << "Delete Web Developer class." << endl;
    }
} ;
```

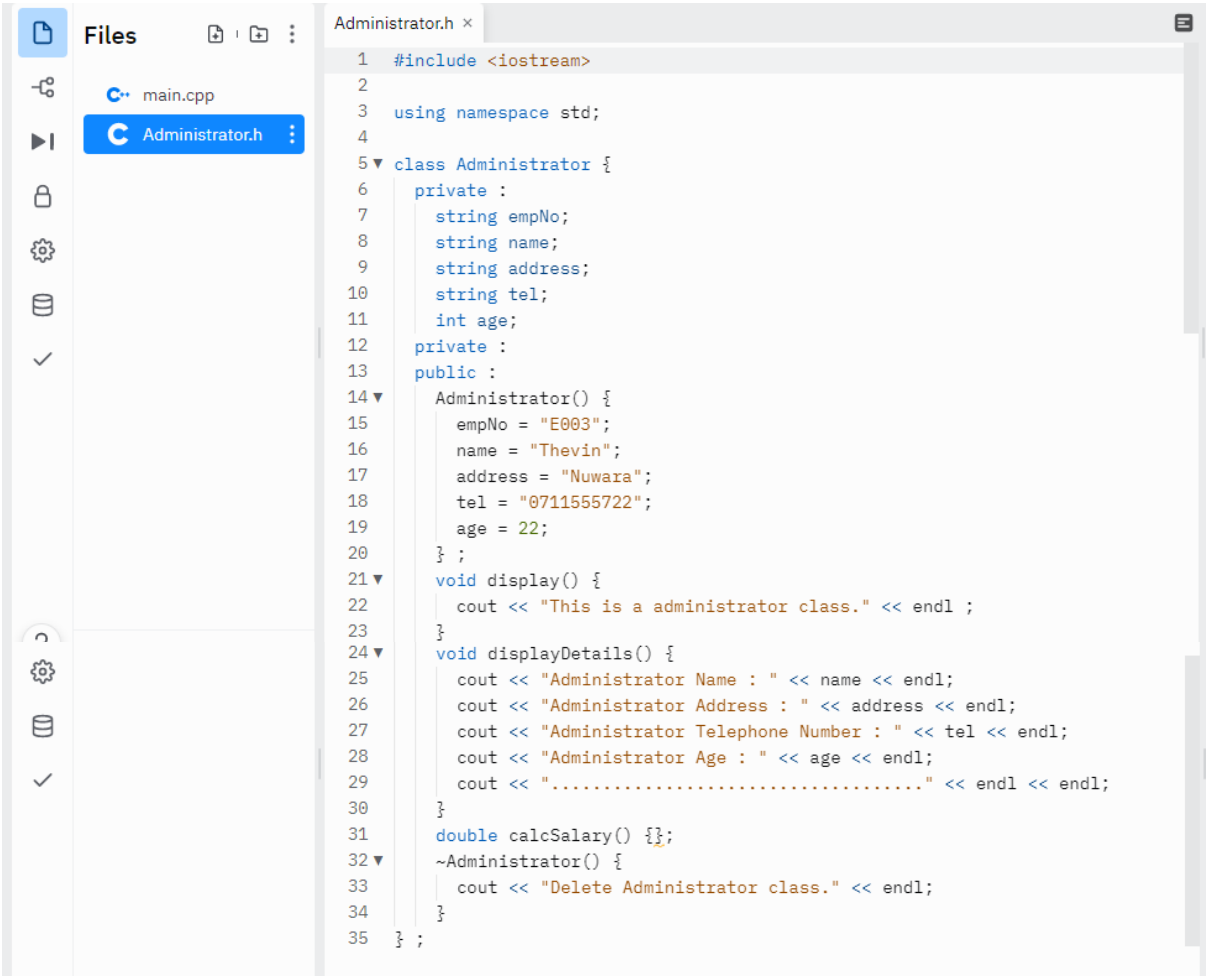
WebDeveloper.cpp file (created by Dilrukshi A G T)



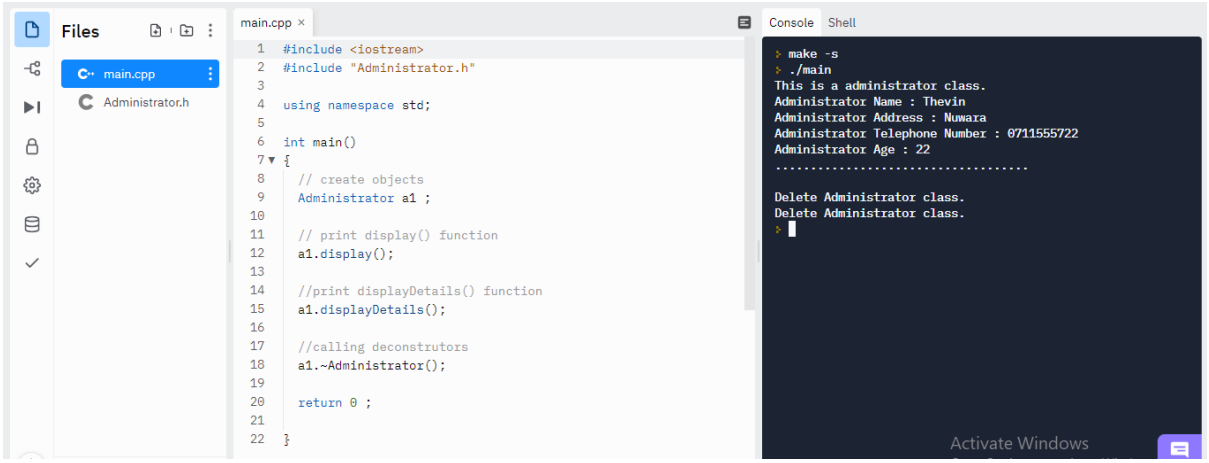
```
#include <iostream>
#include "WebDeveloper.h"

using namespace std;

int main()
{
  // create objects
  WebDeveloper w1 ;

  // print display() function
  w1.display();

  //print displayDetails() function
  w1.displayDetails();

  //calling deconstrutors
  w1.~WebDeveloper();

  return 0 ;

}
```

```
make -s
./main
This is a web developer class.
Web Developer Name : Tharushi
Web Developer Address : Biyagama
Web Developer Telephone Number : 0713616154
Web Developer Age : 22
.....

Delete Web Developer class.
Delete Web Developer class.
```

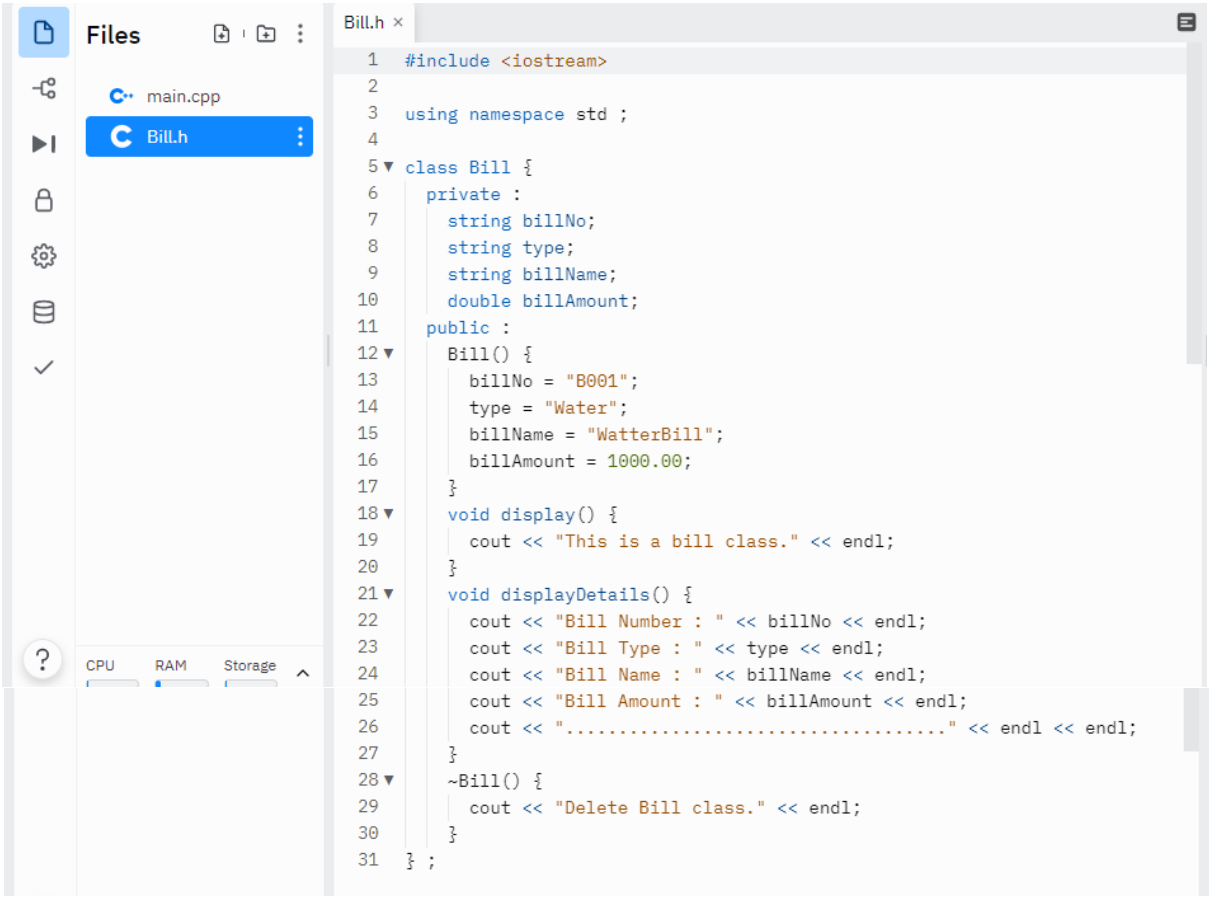
05. Administrator.h file (created by Abeykoon M W T H B)



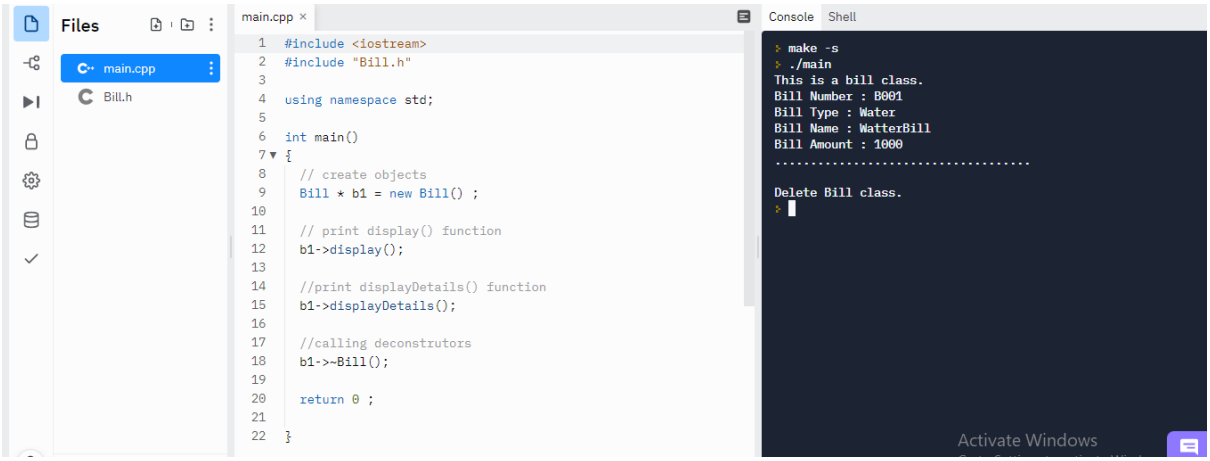
Administrator.cpp file (created by Abeykoon M W T H B)



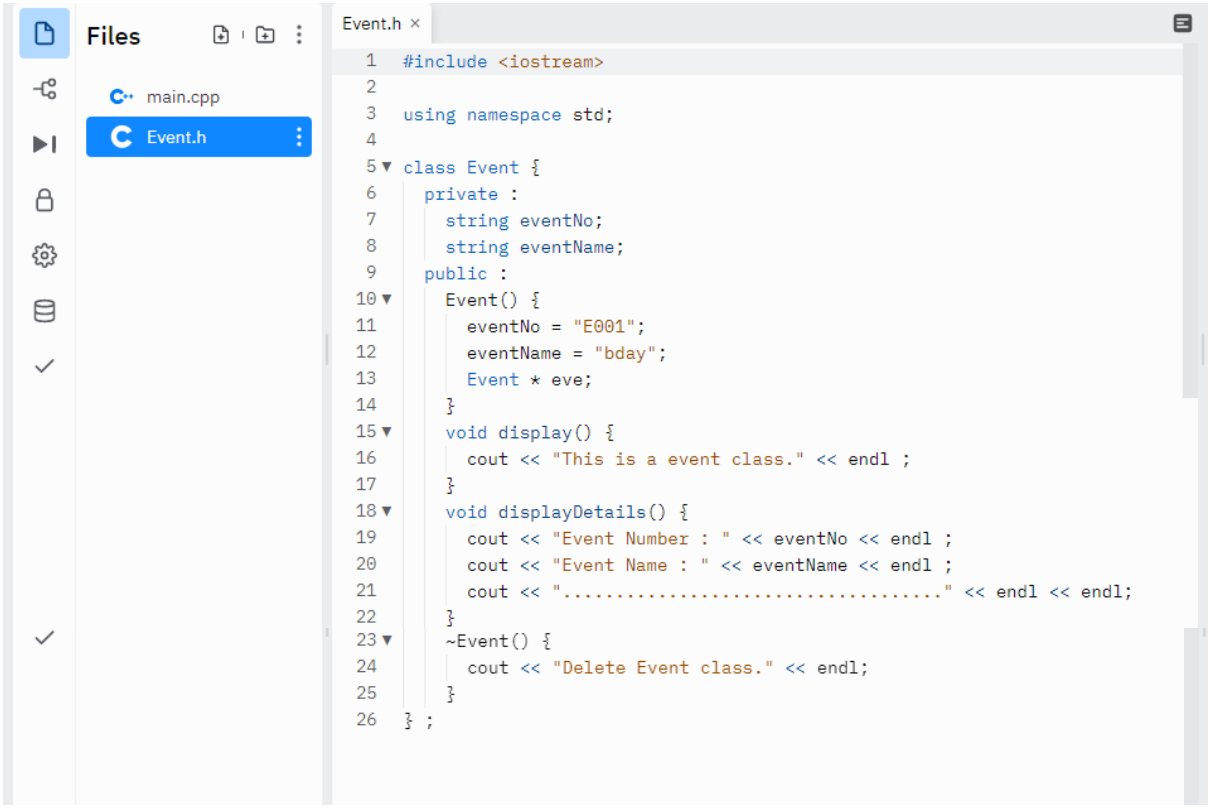
06. Bill.h file (created by Ruhunage S D P R)



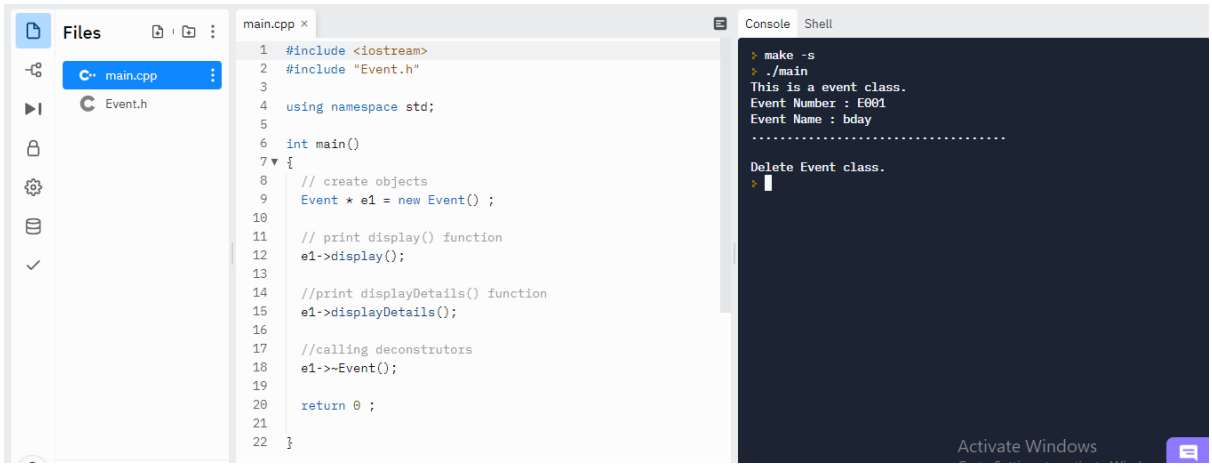
Bill.cpp file (created by Ruhunage S D P R)



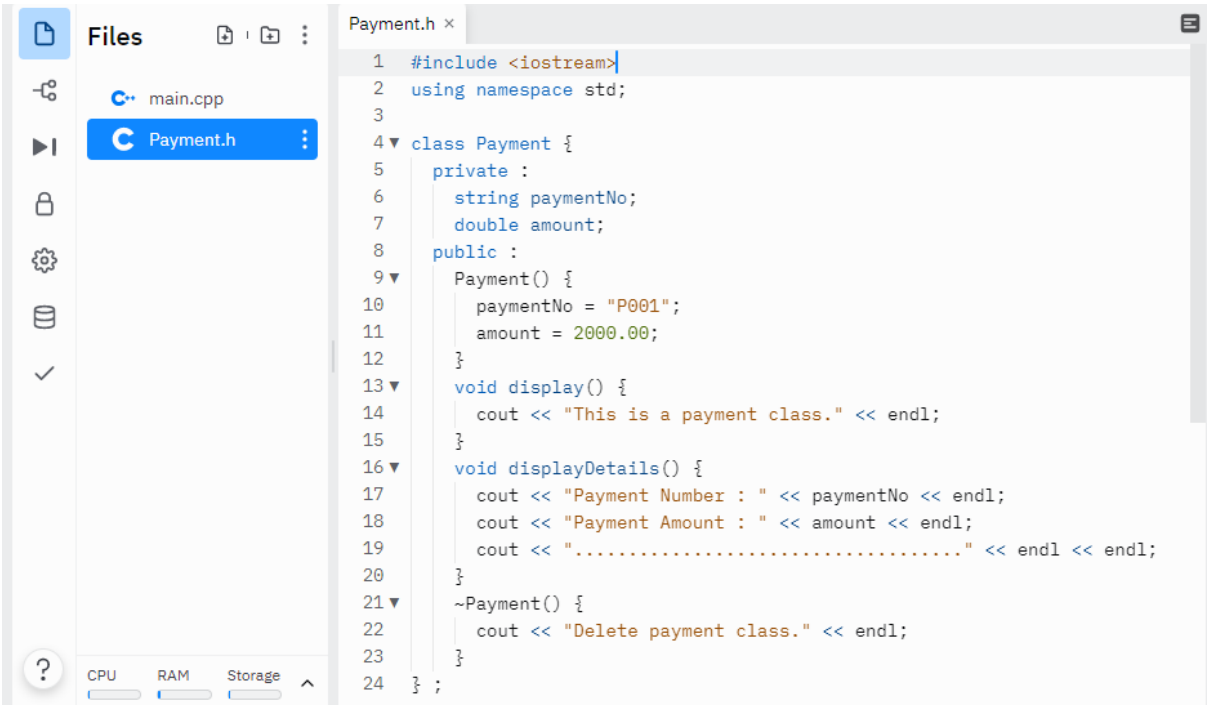
07. Event.h file (created by Dilrukshi A G T)



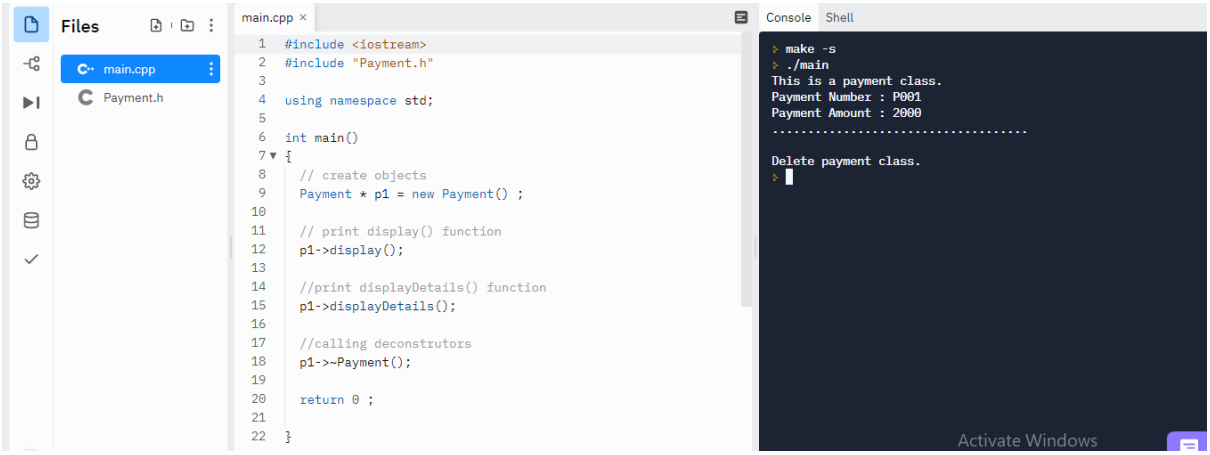
Event.cpp file (created by Dilrukshi A G T)



08. Payment.h file (created by Kariyapperuma K A D C A)



Payment.cpp file (created by Kariyapperuma K A D C A)



Whole Code of System

main.cpp

```cpp
#include <iostream>
using namespace std;

//Customer Class

class Customer {
  protected :
    string name;
    string address;
    string tel;
    int age;
  public :
    Customer( ) {
      name = "Chamath";
      address = "Mathara";
      tel = "0755637447";
      age = 20;
    } ;
    void display( ) {
      cout << "This is a customer class." << endl ;
    }
    void displayDetails( ) {
      cout << "Customer Name : " << name << endl;
      cout << "Customer Address : " << address << endl;
      cout << "Customer Telephone Number : " << tel << endl;
      cout << "Customer Age : " << age << endl;
      cout << "....................................." << endl << endl;
    }
    ~Customer( ) {
      cout << "Delete Customer class." << endl;
    }
} ;

//Event Class

class Event {
  private :
    string eventNo;
    string eventName;
  public :
    Event( ) {
      eventNo = "E001";
      eventName = "bday";
      Event * eve;
    }
    void display( ) {
```

```
47        cout << "This is a event class." << endl ;
48      }
49      void displayDetails() {
50        cout << "Event Number : " << eventNo << endl ;
51        cout << "Event Name : " << eventName << endl ;
52        cout << "....................................." << endl << endl;
53      }
54      ~Event() {
55        cout << "Delete Event class." << endl;
56      }
57  } ;
58
59  //Payment Class
60
61  class Payment {
62    private :
63      string paymentNo;
64      double amount;
65    public :
66      Payment() {
67        paymentNo = "P001";
68        amount = 2000.00;
69      }
70      void display() {
71        cout << "This is a payment class." << endl;
72        cout << "....................................." << endl << endl;
73      }
74      void displayDetails() {
75        cout << "Payment Number : " << paymentNo << endl;
76        cout << "Payment Amount : " << amount << endl;
77        cout << "....................................." << endl << endl;
78      }
79      ~Payment() {
80        cout << "Delete payment class." << endl;
81      }
82  } ;
83
84  //Bill Class
85
86  class Bill {
87    private :
88      string billNo;
89      string type;
90      string billName;
```

```
91      double billAmount;
92      Payment * payments[2];
93      //RegisteredCustomer * regcus;
94    public :
95      Bill() {
96        billNo = "B001";
97        type = "Water";
98        billName = "WatterBill";
99        billAmount = 1000.00;
100     }
101     void display() {
102       cout << "This is a bill class." << endl;
103     }
104     void addPayment() {
105       payments[0] = new Payment();
106       payments[1] = new Payment();
107     }
108     void displayDetails() {
109       cout << "Bill Number : " << billNo << endl;
110       cout << "Bill Type : " << type << endl;
111       cout << "Bill Name : " << billName << endl;
112       cout << "Bill Amount : " << billAmount << endl;
113       cout << "....................................." << endl << endl;
114     }
115     ~Bill() {
116       cout << "Delete Bill class." << endl;
117     }
118 } ;
119
120 //Registered Customer Class
121
122 class RegisteredCustomer : public Customer {
123   private :
124     string customerNo;
125     Bill * bills[1];
126     Event * events[1];
127   public :
128     RegisteredCustomer() {
129       name = "Shashani";
130       address = "Kottawa";
131       tel = "0711108805";
132       age = 20;
133       customerNo = "C001";
134     } ;
135     void display() {
```

```
136         cout << "This is a registered customer class." << endl ;
137       }
138       void displayDetails( ) {
139         cout << "Registered Customer Name : " << name << endl;
140         cout << "Registered Customer Address : " << address << endl;
141         cout << "Registered Customer Telephone Number : " << tel << endl;
142         cout << "Registered Customer Age : " << age << endl;
143         cout << "................................." << endl << endl;
144       }
145       ~RegisteredCustomer( ) {
146         cout << "Delete Registered Customer class." << endl;
147       }
148   } ;
149
150   //Customer Care Person Class
151
152   class CustomerCarePerson {
153     protected :
154       string empNo;
155       string name;
156       string address;
157       double salary;
158       string tel;
159       int age;
160       Customer * customers[2];
161       RegisteredCustomer * registeredcustomers[2];
162     public :
163       CustomerCarePerson( ) {
164         empNo = "E001";
165         name = "Keshala";
166         address = "Kurunegala";
167         tel = "0777523877";
168         age = 20;
169       } ;
170       void display( ) {
171         cout << "This is a customer care person class." << endl ;
172       }
173       void addCustomer( ) {
174         customers[0] = new Customer( );
175         customers[1] = new Customer( );
176       }
177       void addRegisteredCustomer( ) {
178         registeredcustomers[0] = new RegisteredCustomer( );
179         registeredcustomers[1] = new RegisteredCustomer( );
```

```
180     }
181     void displayDetails() {
182       cout << "Customer Care Person Name : " << name << endl;
183       cout << "Customer Care Person Address : " << address << endl;
184       cout << "Customer Care Person Telephone Number : " << tel << endl;
185       cout << "Customer Care Person Age : " << age << endl;
186       cout << "....................................." << endl << endl;
187     }
188     double calcSalary() {};
189     ~CustomerCarePerson() {
190       cout << "Delete Customer Care Person class." << endl;
191     }
192 } ;
193
194 //Web Developer Class
195
196 class WebDeveloper : public CustomerCarePerson {
197   public :
198     WebDeveloper() {
199       empNo = "E002";
200       name = "Tharushi";
201       address = "Biyagama";
202       tel = "0713616154";
203       age = 22;
204     } ;
205     void display() {
206       cout << "This is a web developer class." << endl ;
207     }
208     void displayDetails() {
209       cout << "Web Developer Name : " << name << endl;
210       cout << "Web Developer Address : " << address << endl;
211       cout << "Web Developer Telephone Number : " << tel << endl;
212       cout << "Web Developer Age : " << age << endl;
213       cout << "....................................." << endl << endl;
214     }
215     double calcSalary() {};
216     ~WebDeveloper() {
217       cout << "Delete Web Developer class." << endl;
218     }
219 } ;
220
221 //Administrator Class
222
223 class Administrator : public WebDeveloper {
224   private :
225     Customer * cus;
226     RegisteredCustomer * regcus;
227     Event * eve;
228     Bill * bil;
229   public :
230     Administrator() {
231       empNo = "E003";
232       name = "Thevin";
233       address = "Nuwara";
234       tel = "0711555722";
235       age = 22;
236     } ;
237     void display() {
238       cout << "This is a administrator class." << endl ;
```

```
239     }
240     void displayDetails() {
241       cout << "Administrator Name : " << name << endl;
242       cout << "Administrator Address : " << address << endl;
243       cout << "Administrator Telephone Number : " << tel << endl;
244       cout << "Administrator Age : " << age << endl;
245       cout << "..................................." << endl << endl;
246     }
247     double calcSalary() {};
248     ~Administrator() {
249       cout << "Delete Administrator class." << endl;
250     }
251 } ;
252
253 // This is where the main programe starts
254
255 int main()
256 {
257   // create objects
258
259   Customer c1;
260   RegisteredCustomer rc1;
261   CustomerCarePerson ccp1;
262   WebDeveloper w1;
263
264   Administrator * a1 = new Administrator() ;
265   Bill * b1 = new Bill() ;
266   Event * e1 = new Event() ;
267   Payment * p1 = new Payment() ;
268
269   // print display() function
270
271   c1.display();
272   rc1.display();
273   ccp1.display();
274   w1.display();
275
276   a1->display();
277   b1->display();
278   e1->display();
279   p1->display();
```

```
280
281   //print displayDetails() function
282
283   c1.displayDetails();
284   rc1.displayDetails();
285   ccp1.displayDetails();
286   w1.displayDetails();
287
288   a1->displayDetails();
289   b1->displayDetails();
290   e1->displayDetails();
291   p1->displayDetails();
292
293   //calling deconstrutors
294
295   c1.~Customer();
296   rc1.~RegisteredCustomer();
297   ccp1.~CustomerCarePerson();
298   w1.~WebDeveloper();
299
300   a1->~Administrator();
301   b1->~Bill();
302   e1->~Event();
303   p1->~Payment();
304
305   return 0 ;
306
307 }
```

Output

Console Shell

```
make -s
./main
This is a customer class.
This is a registered customer class.
This is a customer care person class.
This is a web developer class.
This is a administrator class.
This is a bill class.
This is a event class.
This is a payment class.
.....

Customer Name : Chamath
Customer Address : Mathara
Customer Telephone Number : 0755637447
Customer Age : 20
.....

Registered Customer Name : Shashani
Registered Customer Address : Kottawa
Registered Customer Telephone Number : 0711108805
Registered Customer Age : 20
.....

Customer Care Person Name : Keshala
Customer Care Person Address : Kurunegala
Customer Care Person Telephone Number : 0777523877
Customer Care Person Age : 20
.....

Web Developer Name : Tharushi
Web Developer Address : Biyagama
Web Developer Telephone Number : 0713616154
Web Developer Age : 22
.....

Administrator Name : Thevin
Administrator Address : Nuwara
Administrator Telephone Number : 0711555722
Administrator Age : 22
.....

Bill Number : B001
Bill Type : Water
Bill Name : WatterBill
Bill Amount : 1000
.....

Event Number : E001
Event Name : bday
.....

Payment Number : P001
Payment Amount : 2000
.....

Delete Customer class.
Delete Registered Customer class.
Delete Customer class.
Delete Customer Care Person class.
Delete Web Developer class.
Delete Customer Care Person class.
Delete Administrator class.
Delete Web Developer class.
Delete Customer Care Person class.
Delete Bill class.
Delete Event class.
Delete payment class.
Delete Web Developer class.
Delete Customer Care Person class.
Delete Customer Care Person class.
Delete Registered Customer class.
Delete Customer class.
Delete Customer class.
```

Contribution of Projects

Student ID	Student Name	Individual Contribution
IT21108822	Abeykoon M W T H B	• Write requirement analysis description • Identify classes • Write CRC cards of administrator • Design class diagram of administrator • Code of administrator class • Code of whole class
IT21044304	Kariyapperuma K A D C A	• Write requirement analysis description • Identify classes • Write CRC cards of customer and payment • Design class diagram of customer and payment • Code of customer and payment class • Code of whole class
IT21224966	Dilrukshi A G T	• Write requirement analysis description • Identify classes • Write CRC cards of web developer and event • Design class diagram of web developer and event • Code of web developer and event class • Code of whole class
IT21237522	Thathsarani H A N N	• Write requirement analysis description • Identify classes • Write CRC cards of customer care person • Design class diagram of customer care person • Code of customer care person class • Code of whole class
IT21227486	Ruhunage S D P R	• Write requirement analysis description • Identify classes • Write CRC cards of registered customer and event • Design class diagram of web developer and event • Code of web developer and event class • Code of whole class