

Object Oriented Concepts – IT1050

Assignment 2

Year 1, Semester 2

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Cover Page:



Topic: Construction Management System

Group no : MLB_IT.01.02_03

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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.

| Registration No | Name | Contact Number |
|-----------------|----------------------|----------------|
| IT21803420 | S.P.K Waynath | 0769051492 |
| IT21802676 | A.C.H.D Siriwardhana | 0719352275 |
| IT21803284 | R.C.D.N Premavilal | 0769129496 |
| IT21827662 | S.D Dissanayaka | 0774487666 |
| IT21389306 | Wannigama S.V | 0764288002 |



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Assignment 2

System Requirements

- 1. customer should be able to login to the system
- 2. customer can give feedback
- 3. customer should be able to make projects
- 4. customer should be able to contact the company regarding to any issue
- 5. customer should be able to view any blogs posted on the website
- 6. customer should be able to edit their profile
- 7. customer can give requirements that they need in their project
- 8. customer must provide payment to start a contract
- 9. employee should be able to read their reviews
- 10. employee should be able to get their dependent
- 11. employee should be able to supervise the other employees
- 12. employee should be able to see the payment
- 13. employee should be able to see their rating
- 14. employee should be able to view the project details
- 15. employee should be able to see the department details
- 16. employee's details must be stored into the system
- 17. department should store the details of the respective employees in the company
- 18. department should create, delete, and update the details of when the employee started working at the specific department
- 19. the department details must be stored in the system such as (name of department, when it was established, the number of employees, etc...)
- 20. contract should have received payment to conduct the project
- 21. contract details can be updated anytime
- 22. payment method should be specified when doing the contract
- 23. rating will be described according to how the customer views the service
- 24. rating will contain many different types according to the customers preference
- 25. rating must be given by the customer
- 26. rating details must be stored in the system
- 27. rating must be shown to customers
- 28. supplier should be able to update the details of their products and the quantity that it is in
- 29. supplier details must be stored in the system
- 30. Admin answer FAQ
- 31. Admin updates project details
- 32. Admin updates contract details
- 33. Admin should receive the payment details of the customers contract to keep record of their contract



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Assignment 2

Classes that were identified during the noun-verb analysis

- * Employee
- * Customer
- * Department
- * Contract
- * Rating
- * Supplier
- * Construction Materials
- * Payment
- * Project
- * Dependent
- * Supervisor
- * Admin



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Assignment 2

CRC cards for the Construction Management System

| Employee | |
|------------------------------|-----------------|
| Responsibilities: | Collaborations: |
| Login to the system | |
| Read their own reviews | Rating |
| Get their dependent details | Dependent |
| View current project details | Project |
| View department details | Department |
| Send dependent details | Dependent |
| View their own details | |

| Customer | |
|-----------------------------|-------------------|
| Responsibilities: | Collaborations: |
| Login to the system | |
| Provide feedback | Rating |
| Make projects | Project |
| Contact issues with company | |
| Make contract | Contract, Payment |
| View the blogs on the site | |
| Edit their user profile | |

| Department | |
|--------------------------|-----------------|
| Responsibilities: | Collaborations: |
| Store employee details | Employee |
| Add new employee details | Employee |
| Update employee details | Employee |
| Delete employee details | Employee |
| Store department details | |



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| Contract | |
|--------------------------------|-----------------|
| Responsibilities: | Collaborations: |
| Check if payment received | |
| Update details of contract any | Admin |
| time | |
| Specify the payment method | Payment |
| Send Contract details | Project |

| Rating | |
|--------------------------|-----------------|
| Responsibilities: | Collaborations: |
| Store the rating details | |
| Show rating to customer | Customer |
| Delete Rating | Customer |
| Update Rating | Customer |

| Supplier | |
|--------------------------|------------------------|
| Responsibilities: | Collaborations: |
| Login to the system | |
| Update product details | Construction materials |
| Add product details | Construction materials |
| Delete product details | Construction materials |
| Receive order details | |

| Construction Materials | |
|--|-----------------|
| Responsibilities: | Collaborations: |
| Set details of construction materials | Supplier |
| Update details of construction materials | Supplier |
| Add new construction material details | Supplier |



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| Payment | | |
|--------------------------|-----------------|--|
| Responsibilities: | Collaborations: | |
| Valid the payment | | |
| Store Payment details | | |
| Create receipt | | |
| Send Receipt | Customer, Admin | |

| Project | |
|----------------------------|-----------------|
| Responsibilities: | Collaborations: |
| Set the project details | |
| Update the project details | Admin |
| Add new project details | Admin |
| Delete project details | Admin |
| Get contract details | Contract |

| Dependent | | |
|--------------------------|------------------------|--|
| Responsibilities: | Collaborations: | |
| Store dependent details | | |
| Get dependent details | Employee | |

| Supervisor | |
|-----------------------------|-----------------|
| Responsibilities: | Collaborations: |
| Get employee details | Employee |
| Supervise the employee | |
| Distribute task to employee | |

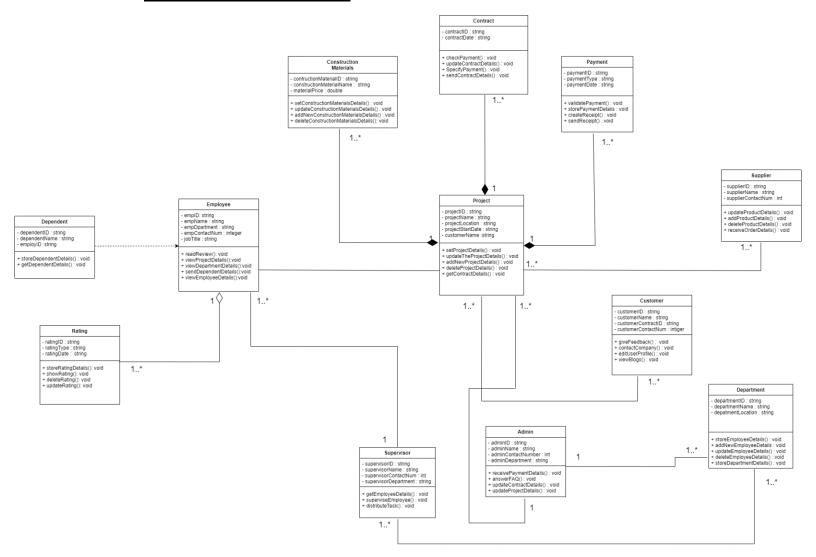
| Admin | |
|--------------------------|-----------------|
| Responsibilities: | Collaborations: |
| Receive payment details | Payment |
| Answer FAQ | |
| Update Project details | Project |
| Update Contract details | Contract |



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Assignment 2

Exercise 1-UML Diagram





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Assignment 2

Exercise 2- C++ code for the entire System

```
#pragma once
class Admin
private:
      //attributes of Admin Class
      char adminID[30];
      char adminName[30];
      int adminContactNumber;
      char adminDepartment[30];
public:
      //constructors
      Admin();
      Admin(const char pAdminID[], const char pAdminName[],int pAdminContactNumber,
const char pAdminDepartment[]);
      //destructor
      ~Admin();
      //methods in the class
      void receivePaymentDetails();
      void answerFAQ();
      void updateContractDetails();
      void updateProjectDetails();
};
#pragma once
class ConstructionMaterials
private:
      //attributes of the class
      char constructionMaterialID[30];
      char constructionMaterialName[30];
      double materialPrice;
public:
      //constructors
      ConstructionMaterials();
      ConstructionMaterials(const char pConstructionMaterialID[], const char
pConstructionName[], double pMaterialPrice);
      //destructor
      ~ConstructionMaterials();
      //methods in the class
      void setConstructionMaterialsDetails();
      void updateConstructionMaterialsDetails();
```



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```
void addNewConstructionMaterialsDetails();
      void deleteConstructionMaterialsDetails();
};
#pragma once
class Contract
private:
      //attributes of Contract Class
      char contractID[30];
      char contractDate[30];
public:
      //constructors
      Contract();
      Contract(const char pContractID[], const char pContractDate[]);
      //destructor
      ~Contract();
      //methods in the class
      void checkPayment();
      void updateContractDetails();
      void specifyPaymentMethod();
      void sendContractDetails();
};
#pragma once
class Customer
private:
      //attributes of the Customer Class
      char customerID[30];
      char customerName[30];
      char customerContractID[30];
      int customerContactNum;
public:
      //constructors
      Customer();
      Customer(const char pCustomerID[], const char pCustomerName[], const char
pContractContracctID[], int pCustomerContactNum);
      //destructor
      ~Customer();
      //methods in the class
      void giveFeedback();
      void contactCompany();
```



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```
void editUserProfile();
      void viewBlogs();
};
#pragma once
class Department
private:
      //attributes of the Department Class
      char departmentID[30];
      char departmentName[30];
      char departmentLocation[30];
public:
      //constructors
      Department();
      Department(const char pDepartmentID[],const char pDepartmentName[], const
char pDepartmentLocation[]);
      //destructor
      ~Department();
      //methods in the class
      void storeEmployeeDetails();
      void addNewEmployeeDetails();
      void deleteEmployeeDetails();
      void updateEmployeeDetails();
      void storeDepartmentDetails();
};
#pragma once
class Dependant
private:
      //there is a dependancy relationship between Employee and Dependant
      //dependant class requre the employee class inorder to exist
      //if the class is deleted the data relating to dependant is deleted also
      //attributes of Dependant Class
      char dependantID[30];
      char dependantName[30];
      char employeeID[30];
public:
      //constructors
      Dependant();
      Dependant(const char pDependantID[], const char pDependantName[], const char
pEmployeeID[]);
      //destructor
```



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```
~Dependant();
      //methods
      void storeDependantDetails();
      void getDependantDetails();
};
#pragma once
#include "Dependant.h"
class Employee
private:
      //attributes of Employee Class
      char empID[30];
      char empName[30];
      char empDpartment[30];
      int empContactNum;
      char jobTitle[30];
      //Dependant object is needed for employee to add their dependant details
      Dependant *dpend1;
public:
      //Constructors
      Employee();
      Employee(const char pEmpID[], const char pEmpName[], const char
pEmpDpartment[], int pEmpContactNum, const char pJobTitle[]);
      //destructor
      ~Employee();
      //methods in the class
      void readReview();
      void viewProjectDetails();
      void viewDepartmentDetails();
      void sendDependantDetails();
      void viewEmployeeDetails();
};
#pragma once
class Payment
private:
      char paymentID[30];
      char paymentType[30];
      char paymentDate[30];
public:
      //constructors
      Payment();
      Payment(const char pPaymentID[], const char pPaymentType[], const char
pPaymentDate[]);
```



Object Oriented Concepts – IT1050

```
//destructor
      ~Payment();
      //methods in the class
      void validatePayment();
      void storePaymentDetails();
      void createReceipt();
      void sendReceipt();
#pragma once
#include "ConstructionMaterials.h"
#include "Contract.h"
#include "Payment.h"
class Project
      //Composition relationship between the Project, Construction Materials,
Contract and Payment classes
      //Project class will not exist unless the construction materials, contract
and payment classes are existing
private:
      //attributes of the Project Class
      char projectID[30];
      char projectName[30];
      char projectLocation[30];
      char projectStartDate[30];
      char customerName[30];
      //objects of Construction Materials, Contract and Payment classes must exist
inorder for the Project class to exist
      ConstructionMaterials* conMat1;
      Contract *contrct1;
      Payment *pymnt1;
public:
      //constructors
      Project();
      Project(const char pProjectID[], const char pProjectName[], const char
pProjectLocation[], const char pProjectStartDate[], const char pCustomerName[]);
      //destructor
      ~Project();
      //methods
      void setProjectDetails();
      void updateTheProjectDetails();
      void addNewProjectDetails();
      void deleteProjectDetails();
      void getContractDetails();
```



Object Oriented Concepts – IT1050

```
};
#pragma once
class Rating
private:
      //Aggregration Relationship between the Rating and the Employee Class
      //When Rating class gets deleted Employee class will remain
      //attributes of Rating Class
      char ratingID[30];
      char ratingType[30];
      char ratingDate[30];
public:
      //constructors
      Rating();
      Rating(const char pRatingID[], const char pRatingType[], const char
pRatingDate[]);
      //destructor
      ~Rating();
      //methods in the class
      void storeRatingDetails();
      void showRating();
      void deleteRating();
      void updateRating();
};
#pragma once
class Supervisor
{
private:
      //attributes of the Supervisor Class
      char supervisorID[30];
      char supervisorName[30];
      int supervisorContactNum;
      char supervisorDepartment[30];
public:
      //constructor
      Supervisor();
      Supervisor(const char pSupervisorID[], const char pSupervisorName[],int
pSupervisorContactNum, const char pSupervisorDepartment[]);
      //destructor
      ~Supervisor();
      //methods in the class
      void getEmployeeDetails();
```



Object Oriented Concepts – IT1050

```
void superviseEmployee();
      void distributeTask();
};
#pragma once
class Supplier
private:
      //attributes of the class
      char supplierID[30];
      char supplierName[30];
      int supplierContactNum;
public:
      //constructors
      Supplier();
      Supplier(const char pSupplierID[], const char pSupplierName[], int
pSupplierContactNum);
      //destructor
      ~Supplier();
      //methods in the class
      void updateProductDetails();
      void addProductDetails();
      void deleteProductDetails();
      void receiveOrderDetails();
};
#include "Admin.h"
#include <iostream>
#include <cstring>
using namespace std;
//constructors
Admin::Admin() {
}
Admin::Admin(const char pAdminID[], const char pAdminName[], int
pAdminContactNumber, const char pAdminDepartment[]) {
      strcpy_s(adminID, pAdminID);
      strcpy_s(adminName, pAdminName);
      adminContactNumber = pAdminContactNumber;
      strcpy_s(adminDepartment,pAdminDepartment);
}
//destructor
Admin::~Admin() {
}
```



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```
//methods in the class
void Admin::receivePaymentDetails() {
void Admin::answerFAQ() {
void Admin::updateContractDetails() {
void Admin::updateProjectDetails() {
      }
#include "ConstructionMaterials.h"
#include <iostream>
#include <cstring>
using namespace std;
//constructors
ConstructionMaterials::ConstructionMaterials() {
ConstructionMaterials::ConstructionMaterials(const char pConstructionMaterialID[],
const char pConstructionMaterialName[], double pMaterialPrice) {
      strcpy_s(constructionMaterialID, pConstructionMaterialID);
      strcpy_s(constructionMaterialName, pConstructionMaterialName);
      materialPrice = pMaterialPrice;
}
//destructor
ConstructionMaterials::~ConstructionMaterials() {
}
//methods in the class
void ConstructionMaterials::setConstructionMaterialsDetails() {
void ConstructionMaterials::updateConstructionMaterialsDetails() {
void ConstructionMaterials::addNewConstructionMaterialsDetails() {
void ConstructionMaterials::deleteConstructionMaterialsDetails() {
      }
```



Object Oriented Concepts – IT1050

```
#include "Contract.h"
#include <iostream>
#include <cstring>
using namespace std;
//constructors
Contract::Contract() {
Contract::Contract(const char pContractID[], const char pContractDate[]) {
      strcpy_s(contractID, pContractID);
      strcpy_s(contractDate, pContractDate);
//destructor
Contract::~Contract() {
}
//methods in the class
void Contract::checkPayment() {
void Contract::updateContractDetails() {
void Contract::specifyPaymentMethod() {
void Contract::sendContractDetails() {
      }
#include "Customer.h"
#include <iostream>
#include <cstring>
using namespace std;
//constructors
Customer::Customer() {
}
Customer::Customer(const char pCustomerID[], const char pCustomerName[], const char
pCustomerContracctID[], int pCustomerContactNum) {
      strcpy_s(customerID, pCustomerID);
      strcpy_s(customerName, pCustomerName);
      strcpy_s(customerContractID, pCustomerContracctID);
      customerContactNum = pCustomerContactNum;
}
```



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```
//destructor
Customer::~Customer() {
}
//methods in the class
void Customer::giveFeedback() {
void Customer::contactCompany() {
void Customer::editUserProfile() {
void Customer::viewBlogs() {
      }
#include "Department.h"
#include <iostream>
#include <cstring>
using namespace std;
//constructors
Department::Department() {
Department::Department(const char pDepartmentID[], const char pDepartmentName[],
const char pDepartmentLocation[]) {
      strcpy_s(departmentID,pDepartmentID);
      strcpy_s(departmentName,pDepartmentName);
      strcpy_s(departmentLocation, pDepartmentLocation);
}
//destructor
Department::~Department() {
}
//methods in the class
void Department::storeEmployeeDetails() {
void Department::addNewEmployeeDetails() {
void Department::deleteEmployeeDetails() {
}
```



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```
void Department::updateEmployeeDetails() {
void Department::storeDepartmentDetails() {
      }
#include "Dependant.h"
#include <iostream>
#include <cstring>
using namespace std;
//Normal Constructor
Dependant::Dependant() {
//Overloaded Constructor
Dependant::Dependant(const char pDependantID[], const char pDependantName[], const
char pEmployeeID[]) {
      strcpy_s(dependantID, pDependantID);
      strcpy_s(dependantName, pDependantName);
      strcpy_s(employeeID, pEmployeeID);
}
//destructor
Dependant::~Dependant() {
}
//methods
void Dependant::getDependantDetails() {
void Dependant::storeDependantDetails() {
}
#include "Employee.h"
#include <iostream>
#include <cstring>
using namespace std;
//Normal Constructor
Employee::Employee() {
}
```



Object Oriented Concepts – IT1050

```
//Overloaded Constructor
Employee::Employee(const char pEmpID[], const char pEmpName[], const char
pEmpDpartment[], int pEmpContactNum, const char pJobTitle[]) {
      strcpy_s(empID,pEmpID);
      strcpy_s(empName, pEmpName);
      strcpy_s(empDpartment, pEmpDpartment);
      empContactNum = pEmpContactNum;
      strcpy_s(jobTitle,pJobTitle);
}
//destructor
Employee::~Employee() {
}
//methods
void Employee::readReview() {
void Employee::viewProjectDetails() {
void Employee::viewDepartmentDetails() {
void Employee::sendDependantDetails() {
void Employee::viewEmployeeDetails() {
}
#include "Payment.h"
#include <iostream>
#include <cstring>
using namespace std;
//constructors
Payment::Payment() {
Payment::Payment(const char pPaymentID[], const char pPaymentType[], const char
pPaymentDate[]) {
      strcpy_s(paymentID, pPaymentID);
      strcpy_s(paymentType, pPaymentType);
      strcpy_s(paymentDate,pPaymentDate);
}
//destructor
```



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```
Payment::~Payment() {
}
//methods in the class
void Payment::validatePayment() {
void Payment::storePaymentDetails() {
void Payment::createReceipt() {
void Payment::sendReceipt() {
      }
#include "Project.h"
#include <iostream>
#include <cstring>
using namespace std;
//constructors
Project::Project() {
Project::Project(const char pProjectID[], const char pProjectName[], const char
pProjectLocation[], const char pProjectStartDate[], const char pCustomerName[]) {
      strcpy_s(projectID, pProjectID);
      strcpy_s(projectName, pProjectName);
      strcpy_s(projectLocation, pProjectLocation);
      strcpy_s(projectStartDate, pProjectStartDate);
      strcpy_s(customerName, pCustomerName);
}
//destructor
Project::~Project() {
}
//methods
void Project::setProjectDetails() {
void Project::updateTheProjectDetails() {
void Project::addNewProjectDetails() {
void Project::deleteProjectDetails() {
```



Object Oriented Concepts – IT1050

```
void Project::getContractDetails() {
      }
#include "Rating.h"
#include <iostream>
#include <cstring>
using namespace std;
//constructors
Rating::Rating() {
Rating::Rating(const char pRatingID[], const char pRatingType[], const char
pRatingDate[]) {
      strcpy_s(ratingID, pRatingID);
      strcpy_s(ratingType, pRatingType);
      strcpy_s(ratingDate, pRatingDate);
}
//destructor
Rating::~Rating() {
}
//methods in the class
void Rating::storeRatingDetails() {
void Rating::showRating() {
void Rating::deleteRating() {
void Rating::updateRating() {
      }
#include "Supervisor.h"
#include <iostream>
#include <cstring>
using namespace std;
//constructor
Supervisor::Supervisor(){
```



Object Oriented Concepts – IT1050

```
Supervisor::Supervisor(const char pSupervisorID[], const char pSupervisorName[], int
pSupervisorContactNum, const char pSupervisorDepartment[]) {
      strcpy_s(supervisorID, pSupervisorID);
      strcpy_s(supervisorName,pSupervisorName);
      supervisorContactNum = pSupervisorContactNum;
      strcpy_s(supervisorDepartment,pSupervisorDepartment);
}
//destructor
Supervisor::~Supervisor() {
}
//methods in the class
void Supervisor::getEmployeeDetails() {
void Supervisor::superviseEmployee() {
}
void Supervisor::distributeTask() {
      }
#include "Supplier.h"
#include <iostream>
#include <cstring>
using namespace std;
//constructors
Supplier::Supplier() {
Supplier::Supplier(const char pSupplierID[], const char pSupplierName[], int
pSupplierContactNum) {
      strcpy_s(supplierID, pSupplierID);
      strcpy_s(supplierName, pSupplierName);
      supplierContactNum = pSupplierContactNum;
}
//destructor
Supplier::~Supplier() {
}
//methods in the class
void Supplier::updateProductDetails() {
void Supplier::addProductDetails() {
```



Object Oriented Concepts – IT1050

```
void Supplier::deleteProductDetails() {
void Supplier::receiveOrderDetails() {
      }
#include <iostream>
#include <cstring>
//calling class header files
#include "Admin.h"
#include "ConstructionMaterials.h"
#include "Contract.h"
#include "Customer.h"
#include "Department.h"
#include "Dependant.h"
#include "Employee.h"
#include "Payment.h"
#include "Project.h"
#include "Rating.h"
#include "Supervisor.h"
#include "Supplier.h"
using namespace std;
//main program
int main() {
      //Object for Admin Class
      Admin admn1("ADM001", "joe joena", 0712345671, "Database");
      admn1.answerFAQ();
      admn1.receivePaymentDetails();
      admn1.updateContractDetails();
      admn1.updateProjectDetails();
      //Object for Construction Material Class
      ConstructionMaterials conMat1("PLK001", "Lanwa Steel", 120000.99);
      conMat1.addNewConstructionMaterialsDetails();
      conMat1.deleteConstructionMaterialsDetails();
      conMat1.setConstructionMaterialsDetails();
      conMat1.updateConstructionMaterialsDetails();
      //Object for Contract Class
      Contract contrct1("CON001","2/2/2013");
      contrct1.checkPayment();
      contrct1.sendContractDetails();
      contrct1.specifyPaymentMethod();
      contrct1.updateContractDetails();
```



Object Oriented Concepts – IT1050

```
//Object for Customer Class
      Customer cust1("Cid001","john richard", "CON001", 0123456712);
      cust1.contactCompany();
      cust1.editUserProfile();
      cust1.giveFeedback();
      cust1.viewBlogs();
      //Objects for Department Class
      Department dept1("DID001", "Engineering", "New Kandy Road");
      dept1.addNewEmployeeDetails();
      dept1.deleteEmployeeDetails();
      dept1.storeDepartmentDetails();
      dept1.storeEmployeeDetails();
      dept1.updateEmployeeDetails();
      //Objects for Dependant Class
      Dependant dpnd1("DPNN001", "Maththew silva", "Cid001");
      dpnd1.getDependantDetails();
      dpnd1.storeDependantDetails();
      //Object for Employee Class
      Employee emp1("CSK001", "John silva", "Engineering", 0123456712, "Supervisor");
      emp1.readReview();
      emp1.sendDependantDetails();
      emp1.viewDepartmentDetails();
      emp1.viewEmployeeDetails();
      emp1.viewProjectDetails();
      //Object for Payment Class
      Payment pymnt1("PMY001","Visa","1/12/2012");
      pymnt1.createReceipt();
      pymnt1.sendReceipt();
      pymnt1.storePaymentDetails();
      pymnt1.validatePayment();
      //Object for Project Class
      Project proj1("PROJ001", "Siedal Towers", "New Kandy Street", "2/2/2013",
"john richard");
      proj1.addNewProjectDetails();
      proj1.deleteProjectDetails();
      proj1.getContractDetails();
      proj1.setProjectDetails();
      proj1.updateTheProjectDetails();
      //Object for Rating Class
      Rating rate1("RT001", "star", "2/2/2013");
      rate1.deleteRating();
      rate1.showRating();
      rate1.storeRatingDetails();
      rate1.updateRating();
```



Object Oriented Concepts – IT1050

```
//Object for Supervisor Class
Supervisor supvsr1("SUP001","John michaels",0122267721,"Engineering");
supvsr1.distributeTask();
supvsr1.getEmployeeDetails();
supvsr1.superviseEmployee();

//Object for Supplier Class
Supplier supp1("SPP001","John Super Steel",0623122223);
supp1.addProductDetails();
supp1.deleteProductDetails();
supp1.receiveOrderDetails();
supp1.updateProductDetails();
```