

**AMERICAN INTERNATIONAL UNIVERSITY–BANGLADESH (AIUB)**

**FACULTY OF SCIENCE & TECHNOLOGY**

**DEPARTMENT OF Computer Science**

**Object Oriented Programing 1 [Java]**

**Summer 2020-2021**

**Section: H, Group: 03**

**Presented to**

**Md. Mazid-Ul-Haque**

**Members :**

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| --- | --- | --- |
| **Name** | **ID** | **Project Part** |
| **S M Faisal** | 20-44367-3 | Reader, Library, Start, FileReadWriteDemo, Presenter |
| **Sanjida Jahan** | 21-44684-1 | Structure design, Book, Account, Employee |
| **MD Nazmul Islam** | 20-44358-3 | AssociateMembershipAccount,  SupportedMembershipAccount, InstitutionalMembershipAccount |
| **MD Arik Ahemed Zelan** | 21-44600-1 | Interfaces, Text Book, Story Book, Design |

**Project Structure**

**Library Management System**

**Diagram**

has >

Account

IReaderOperations

IEmployeeOperations

Reader

IAccountOperations

AssociateMembershipAccount

has >

has >

Employee

SupportedMembershipAccount

Library

InstitutionalMembershipAccount

TextBook

Book

IMembershipTransactions

StoryBook

**Interfaces**

|  |  |
| --- | --- |
| IReaderMembershipTransactions | IAccountOperations |
| boolean renewMembership(double amount)  boolean removeMembership(double amount) | boolean insertAccount(Account a)  boolean removeAccount(Account a)  Account searchAccount(int accountNumber)  void showAllAccounts( ) |

|  |  |
| --- | --- |
| IReaderOperations | IEmployeeOperations |
| boolean insertReader(Reader r)  boolean removeReader(Reader r)  Reader searchReader(int nid)  void showAllReaders( ) | boolean insertEmployee(Employee e)  boolean removeEmployee(Employee e)  Employee searchEmployee(String empId)  void showAllEmployees( ) |

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| --- | --- |
| IBookShopOperations | IBookOperations |
| boolean insertBook(Book b)  boolean removeBook(Book b)  void showAllBooks()  Book searchBook(String isbn) | void addQuantity(int amount)  void sellQuantity(int amount) |

**Classes**

|  |  |  |
| --- | --- | --- |
| Account[implements IReaderMembership] | Reader[implements IAccountOperations] | Employee |
| int accountNumber  String accountHolderName  double balance | String name  int age  int nid  Account accounts[ ] | String name  String empId  double salary |
| void setAccountNumber(int accountNumber)  void setBalance(double balance)  void setAccountHolderName()  int getAccountNumber( )  String getAccountHolderName()  double getBalance( )  abstract void showDetails( )  boolean renewMembership(double amount)  boolean removeMembership(double amount) | void setName(String name)  void setAge(int age)  void setNid(int nid)  String getName( )  int getAge()  int getNid( )  void showDetails()  boolean insertAccount(Account a)  boolean removeAccount(Account a)  Account searchAccount(int accountNumber)  void showAllAccounts( ) | void setName(String name)  void setEmpId(String empId)  void setSalary(double salary)  String getName( )  String getEmp( )  double getSalary( ) |

|  |  |  |
| --- | --- | --- |
| Book[implements BookOperations] | StoryBook[extends Book] | TextBook[extends Book] |
| String isbn  String bookTitle  String authorName  double price  int availableQuantity | private String category | private int standard |
| public Book()  public Book(String isbn, String bookTitle, String authorName, double price, int availableQuantity)  public void setIsbn(String isbn)  public void setBookTitle(String bookTitle)  public void setAuthorName(String authorName)  public void setPrice(double price)  public void setAvaiableQuantity(int availableQuantity)  public String getIsbn()  public String getBookTitle()  public String getAuthorName()  public double getPrice()  public int getAvailableQuantity()  public void addQuantity(int amount)  public void sellQuantity(int amount)  public abstract void showDetails() | public StoryBook()  public StoryBook(String isbn, String bookTitle, String authorName, double price, int availableQuantity,  String category)  public void setCategory(String category)  public String getCategory()  public void showDetails() | public TextBook()  public TextBook(String isbn, String bookTitle, String authorName, double price, int availableQuantity, int standard)  public void setStandard(int standard)  public int getStandard()  public void showDetails() |

|  |  |  |  |
| --- | --- | --- | --- |
| AssociateMembershipAccount  [extends Account] | SupportedMembershipAccount  [extends Account] | InstitutionalMembershipAccount  [extends Account] | Library[implements IReaderOperations, IEmployeeOperations, BookShopOperations] |
| double membershipDuration | double discountRate | double membershipDuration | Reader readers[ ]  Employee employees[ ]  Book books[] |
| void setmembershipDuration(double membershipDuration)  double getmembershipDuration()  void showDetails( ) | void setdiscountRate(double discountRate)  double getdiscountRate()  void showDetails( ) | void setmembershipDuration(double membershipDuration)  double getmembershipDuration()  void showDetails( ) | boolean insertReader(Reader c)  boolean removeReader(Reader c)  Reader searchReader(int nid)  void showAllReader()  boolean insertEmployee(Employee e)  boolean removeEmployee(Employee e)  Employee searchEmployee(String empId)  void showAllEmployees()  boolean insertBook(Book b)  boolean removeBook(Book b)  void showAllBooks()  Book searchBook(String isbn) |

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| --- |
| Start |
| **The Start class contains the main method. Inside the main method the application prompts the user to choose among the following options:**   1. Employee Management 2. Reader Management 3. Reader Account Management 4. Reader Membership[Renew Membership & Remove Membership] 5. Exit   Upon choosing any of the option the user is given some further options to choose from:  ***Options for Employee Management:***   1. Insert New Employee 2. Remove Existing Employee 3. Search Existing Employee 4. Show All Employee 5. Go Back   ***Options for Reader Management:***   1. Insert New Reader 2. Remove Existing Reader 3. Search Existing Reader 4. Show All Reader 5. Go Back   ***Options for Reader Account Management:***   1. Insert New Account 2. Remove Existing Account 3. Search Existing Account 4. Show All Account 5. Go Back   ***Options for Reader Membership Transactions[Renew Membership & Cancel Membership]:***   1. Renew Membership 2. Cancel Membership 3. Show All Operaions 4. Go Back   ***Options for Book Management :***   1. For Employee 2. For Reader 3. Go Back |

**END**