**International Islamic University**

**Department of computer science**

**Assignment No. 3**

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**Section:** b

**Question no #1:**

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| “item.h”  #pragma once  #include<iostream>  #include<string>  using namespace std;  class item  {  string name;  int price, product;  public:  void get()  {  cout << "enter name of item: ";  cin >> name;  cout << "enter product id: ";  cin >> product;  cout << "enter price of item: ";  cin >> price;  }  void put()  {  cout << "name of product: " << name << endl  << "product id: " << product << endl  << "price of item: " << price << endl;  }  int getproduct()  {  return product;  }  int getprice()  {  return price;  }  virtual void getdata() = 0;  virtual void putdata() = 0;  }; |

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| “utility.h”  #pragma once  #include<iostream>  #include<string>  using namespace std;  #include "item.h"  class utility :  public item  {  int discount;  public:  void getdata()  {  item::get();  cout << "enter discount on utility item: ";  cin >> discount;  }  void putdata()  {  item::put();  cout << "discount on utility item: " << discount << endl;  }  }; |

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| “food.h”  #pragma once  #include "item.h"  #include<iostream>  #include<string>  using namespace std;  class food :  public item  {  int expiry;  public:  void getdata()  {  item::get();  cout << "enter the date of expiry: ";  cin >> expiry;  }  void putdata()  {  item::put();  cout << "date of expiry: " << expiry << endl;  }  }; |

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| “mall.cpp”  #include<iostream>  #include<string>  #include "mall.h"  #include"item.h"  #include"utility.h"  #include"food.h"  using namespace std;  int main()  {  item \*t[12];  char choice, c;  int n = 1;  int c1, c2, prod, p;  do  {  cout << "u: For utility item" << endl  << "f: For food item" << endl  << "enter u or f";  cin >> c;  if (c == 'u')  {  t[n] = new utility;  cout << "1: Find an item by product id" << endl  << "2: Update information of utility items" << endl  << "3: Display the data for all the utility items" << endl  << "4: Display information of Item having minimum price" << endl  << "5: Exit" << endl;  do  {  cout << "enter your choice";  cin >> c1;  switch (c1)  {  case 1:  {  cout << "enter your product id: ";  cin >> prod;  for (int i = 0; i < 12; i++)  {  if (prod == t[i]->getproduct())  t[i]->putdata();  }  break;  }  case 2:  {  t[n]->getdata();  break;  }  case 3:  {  for (int i = 0; i < 12; i++)  {  t[i]->putdata();  }  break;  }  case 4:  {  p = t[0]->getprice();  for (int i = 0; i < 12; i++)  {  if (t[i]->getprice() < p)  p == t[i]->getprice();  }  cout << "item having minimum price: " << p << endl;  break;  }  default:cout << "enter valid choice" << endl;  }  } while (c1 != 5);  }  else  {  t[n] = new food;  cout << "1: Find an item by product id" << endl  << "2: Update information of utility items" << endl  << "3: Display the data for all the utility items" << endl  << "4: Display information of Item having minimum price" << endl  << "5: Exit" << endl;  do  {  cout << "enter your choice: ";  cin >> c2;  switch (c2)  {  case 1:  {  cout << "enter your product id: ";  cin >> prod;  for (int i = 0; i < 12; i++)  {  if (prod == t[i]->getproduct())  t[i]->putdata();  }  break;  }  case 2:  {  t[n]->getdata();  break;  }  case 3:  {  for (int i = 0; i < 12; i++)  {  t[i]->putdata();  }  break;  }  case 4:  {  p = t[0]->getprice();  for (int i = 0; i < 12; i++)  {  if (t[i]->getprice() < p)  p == t[i]->getprice();  }  cout << "item having minimum price: " << p << endl;  break;  }  default:cout << "enter valid choice" << endl;  }  } while (c2 != 5);  }  n++;  cout << "enter y to continue and n to exit: ";  cin >> choice;  } while (choice != 'n');  system("pause");  return 0;  } |

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| **Result:** |

**Question no #2:**

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| “bankaccount.h”  #pragma once  #include<iostream>  #include<string>  using namespace std;  class bankaccount  {  int accountno, balance;  string name;  public:  void setbank(int a,string n,int b)  {  accountno = a;  name = n;  balance = b;  }  void put()  {  cout << "bank account no: "<<accountno<<endl;  cout << "your account balance: "<<balance<<endl;  cout << "your name: "<<name<<endl;  }  void get()  {  cout << "enter your account no: ";  cin >> accountno;  cout << "enter your name: ";  cin >> name;  cout << "enter your account balance: " << endl;  cin >> balance;  }  void deposit()  {  int d;  cout << "enter the amount of balance to deposit: ";  cin >> d;  balance = balance + d;  }  int getbalance()  {  return balance;  }  int getaccountno()  {  return accountno;  }  void setbalance(int b)  {  balance = b;  }  virtual void withdraw() = 0;  virtual void putdata() = 0;  virtual void getdata() = 0;  }; |

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| “checkingaccount.h”  #pragma once  #include "bankaccount.h"  #include<iostream>  #include<string>  using namespace std;  class checkingaccount :  public bankaccount  {  int nochecks;  public:  void setchecking(int c, int a, string n, int b)  {  nochecks = c;  bankaccount::setbank(a, n, b);  }  void putdata()  {  bankaccount::put();  cout << "the no of checks: "<<nochecks<<endl;  }  void getdata()  {  bankaccount::get();  cout << "enter no of checks: ";  cin >> nochecks;  }  int getcheck()  {  return nochecks;  }  void withdraw()  {  int w;  cout << "enter amount to withdraw: ";  cin >> w;  if (bankaccount::getbalance() > 5000)  {  w = w - bankaccount::getbalance();  bankaccount::setbalance(w);  cout << "your balance after withdrawing: " << w << endl;  }  else  {  cout << "your balance is less then 5000 after withdrawing so withdraw less ammount" << endl;  cout << "your balance is: " << bankaccount::getbalance() << endl;  }  }  }; |

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| “savingaccount.h”  #pragma once  #include "bankaccount.h"  #include<iostream>  #include<string>  using namespace std;  class savingaccount :  public bankaccount  {  int interest;  public:  void setsaving(int i, int a, string n, int b)  {  interest = i;  bankaccount::setbank(a, n, b);  }  void putdata()  {  bankaccount::put();  cout << "enter the amount of interest: "<<interest<<endl;  }  void getdata()  {  bankaccount::get();  cout << "enter interest rate: ";  cin >> interest;  }  void withdraw()  {  int w;  cout << "enter amount to withdraw: ";  cin >> w;  if (w < 50000)  {  w = w - bankaccount::getbalance();  bankaccount::setbalance(w);  }  }  }; |

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| “record.cpp”  #include "record.h"  #include"bankaccount.h"  #include"checkingaccount.h"  #include"savingaccount.h"  #include<iostream>  #include<string>  #include<fstream>  using namespace std;  int main()  {  bankaccount \*b1[100];  checkingaccount c1[50];  savingaccount s1[50];  ofstream fout,fout1;  int a, b, c, i;  string n;  int accno;  fout.open("checkinginfo.txt");  for (int i = 0; i < 50; i++)  {  cout << "for checking account" << endl;  cout << "enter your account no " << i + 1 << " : ";  cin >> a;  cout<<"enter your balance " << i + 1 << " : ";  cin >> b;  cout<<"enter no of checks " << i + 1 << " : ";  cin >> c;  cout<<"enter your name " << i + 1 << " : ";  cin >> n;  fout << a << endl  << n << endl  << b << endl  << c << endl;  }  fout.close();  fout1.open("savinginfo.txt");  for (int i = 0; i < 50; i++)  {  cout << "for saving account" << endl;  cout << "enter your account no " << i + 1 << " : ";  cin >> a;  cout << "enter your name " << i + 1 << " : ";  cin >> n;  cout << "enter your balance " << i + 1 << " : ";  cin >> b;  cout << "enter interest rate " << i + 1 << " : ";  cin >> i;  fout << a << endl  << n << endl  << b << endl  << i << endl;  }  fout1.close();  ifstream fin,fin1;  fin.open("checkinginfo.txt");  for (int i = 0; i < 50; i++)  {  fin >> a;  fin >> n;  fin >> b;  fin >> c;  c1[i].setchecking(c, a, n, b);  }  fin.close();  fin1.open("savinginfo.txt");  for (int i = 0; i < 50; i++)  {  fin1 >> a;  fin1 >> n;  fin1 >> b;  fin1 >> i;  s1[i].setsaving(i, a, n, b);  }  fin1.close();  int a1 = 0, count1, count2;  char opt,check;  do  {  cout << "c: For checking account: " << endl  << "s: For saving account: " << endl;  cin >> opt;  if (opt == 'c')  {  b1[a1] = new checkingaccount;  cout <<"$$$ MENU $$$"<<endl  << "1: Display information of all account holders" << endl  << "2: Check balance" << endl  << "3: Withdraw amount" << endl  << "4: Deposit amount" << endl  << "5: Find by account number" << endl  << "6: Update information of account holder" << endl  << "7: Write information of all the account holders to a file Output.txt" << endl  << "8: Exit" << endl;  do  {  cout << "enter your choice: ";  cin >> count1;  switch (count1)  {  case 1:  {  for (int i = 1; i <= 50; i++)  {  c1[i].putdata();  }  break;  }  case 2:  {  cout << "enter your account no to check balance: ";  cin >> accno;  for (int i = 1; i <= 50; i++)  {  if (accno == b1[i]->getaccountno())  cout <<"your balance is: "<< b1[i]->getbalance() << endl;  }  break;  }  case 3:  {  cout << "enter your account no to check balance: ";  cin >> accno;  for (int i = 1; i <= 50; i++)  {  if (accno == b1[i]->getaccountno())  c1[i].withdraw();  }  break;  }  case 4:  {  cout << "enter your account no to check balance: ";  cin >> accno;  for (int i = 1; i <= 50; i++)  {  if (accno == b1[i]->getaccountno())  b1[i]->deposit();  }  break;  }  case 5:  {  cout << "enter your account no to check balance: ";  cin >> accno;  for (int i = 1; i <= 50; i++)  {  if (accno == b1[i]->getaccountno())  {  c1[i].putdata();  }  }  break;  }  case 6:  {  b1[a1]->getdata();  break;  }  case 7:  {  fout.open("output.txt");  for (int i = 0; i < 50; i++)  {  cout << "for checking account" << endl;  cout << "enter your account no " << i + 1 << " : ";  cin >> a;  cout << "enter your name " << i + 1 << " : ";  cin >> n;  cout << "enter your balance " << i + 1 << " : ";  cin >> b;  cout << "enter no of checks " << i + 1 << " : ";  cin >> c;  fout << a << endl  << n << endl  << b << endl  << c << endl;  }  fout.close();  }  default:cout << "enter valid choice" << endl;  }  } while (count1 != 8);  }  else  {  b1[a1] = new savingaccount;  cout << "$$$ MENU $$$" << endl  << "1: Display information of all account holders" << endl  << "2: Check balance" << endl  << "3: Withdraw amount" << endl  << "4: Deposit amount" << endl  << "5: Find by account number" << endl  << "6: Update information of account holder" << endl  << "7: Write information of all the account holders to a file Output.txt" << endl  << "8: Exit" << endl;  do  {  cout << "enter your choice: ";  cin >> count2;  switch (count2)  {  case 1:  {  for (int i = 1; i <= 50; i++)  {  s1[i].putdata();  }  break;  }  case 2:  {  cout << "enter your account no to check balance: ";  cin >> accno;  for (int i = 1; i <= 50; i++)  {  if (accno == b1[i]->getaccountno())  cout << "your balance is: " << b1[i]->getbalance() << endl;  }  break;  }  case 3:  {  cout << "enter your account no to check balance: ";  cin >> accno;  for (int i = 1; i <= 50; i++)  {  if (accno == b1[i]->getaccountno())  s1[i].withdraw();  }  break;  }  case 4:  {  cout << "enter your account no to check balance: ";  cin >> accno;  for (int i = 1; i <= 50; i++)  {  if (accno == b1[i]->getaccountno())  b1[i]->deposit();  }  break;  }  case 5:  {  cout << "enter your account no to check balance: ";  cin >> accno;  for (int i = 1; i <= 50; i++)  {  if (accno == b1[i]->getaccountno())  {  s1[i].putdata();  }  }  break;  }  case 6:  {  b1[a1]->getdata();  break;  }  case 7:  {  fout1.open("output.txt");  for (int i = 0; i < 50; i++)  {  cout << "for saving account" << endl;  cout << "enter your account no " << i + 1 << " : ";  cin >> a;  cout << "enter your name " << i + 1 << " : ";  cin >> n;  cout << "enter your balance " << i + 1 << " : ";  cin >> b;  cout << "enter interest rate " << i + 1 << " : ";  cin >> i;  fout << a << endl  << n << endl  << b << endl  << i << endl;  }  fout1.close();  }  default:cout << "enter valid choice" << endl;  }  } while (count2 != 8);  }  a1++;  cout << "enter y to continue and n to exit: ";  cin >> check;  } while (check!='n');  system("pause");  return 0;  } |

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| Result: |