**public** **class** Cash **extends** Donation

{

**private** String currency;

**public** Cash(**double** amt, String loc, String don, String cur)

{

**super**(amt, loc, don);

currency = cur;

}

**public** Cash(Cash csh)

{

**super**(csh);

currency = csh.currency;

}

**public** String getCurrency()

{

**return** currency;

}

**public** **void** display()

{

**super**.display();

System.*out*.println("Currency: " + currency);

}

}

**import** java.io.\*;

**public** **class** CharityAssociation **implements** IOInterface

{

**private** String name;

**private** Donation arDonation[];

**private** **int** nb;

**public** CharityAssociation(String name, **int** size)

{

**this**.name = name;

arDonation = **new** Donation[size];

nb = 0;

}

**public** **boolean** addDonation(Donation d)

{

**if**(nb < arDonation.length)

{

**if**(d **instanceof** Cash)

{

arDonation[nb] = **new** Cash((Cash) d);

}

**else**

{

arDonation[nb] = **new** Check((Check) d);

}

nb++;

**return** **true**;

}

**return** **false**;

}

**public** **double** avgCashDonation(String cur) {

**double** sum = 0.00;

**double** amnt = 0.00;

**for**(**int** i=0; i<nb; i++) {

**if**( arDonation[i] **instanceof** Cash &&

((Cash)arDonation[i]).getCurrency().equals(cur) ) {

**try** {

amnt = arDonation[i].getAmount();

sum += amnt;

}

**catch**(Exception e) { }

}

}

**if**(nb != 0) {

**return** sum/nb;

}

**return** sum;

}

**public** Donation getCheck(String bName) {

**for**(**int** i=0; i<nb; i++) {

**if**( arDonation[i] **instanceof** Check &&

((Check)arDonation[i]).getBankName().equals(bName) ) {

**return** arDonation[i];

}

}

**return** **null**;

}

**public** **void** saveToFile(String fileName, String donor) **throws** IOException {

File f = **new** File(fileName);

FileOutputStream fo = **new** FileOutputStream(f);

ObjectOutputStream os = **new** ObjectOutputStream(fo);

**try** {

**for**(**int** i=0; i<nb; i++) {

**if**(arDonation[i] **instanceof** Cash &&

arDonation[i].getDonorName().equals(donor)) {

os.writeObject(arDonation[i]);

}

}

}

**catch**(IOException e)

{

System.*out*.println("Error in saveToFile");

}

os.close();

}

**public** **void** loadFromFile(String fileName, Check arrCheck[])**throws** IOException {

File f = **new** File(fileName);

FileInputStream fi = **new** FileInputStream(f);

ObjectInputStream is = **new** ObjectInputStream(fi);

Donation d;

**int** j = 0;

**try**

{

**while** (**true**){

d = (Donation) is.readObject();

**if**( d **instanceof** Check &&

j < arrCheck.length){ // this is optional

arrCheck[j] = (Check) d;

j++;

}

}

}

**catch**(Exception e)

{

is.close();

}

}

}

**public** **class** Check **extends** Donation

{

**private** String bankName;

**public** Check(**double** amt, String loc, String don, String bName)

{

**super**(amt, loc, don);

bankName = bName;

}

**public** Check(Check ck)

{

**super**(ck);

bankName = ck.bankName;

}

**public** String getBankName()

{

**return** bankName;

}

**public** **void** display()

{

**super**.display();

System.*out*.println("Bank Name: " + bankName);

}

}

**import** java.io.Serializable;

**public** **class** Donation **implements** Serializable {

**private** **double** amount;

**private** String location;

**private** String donorName;

**public** Donation(**double** amt, String loc, String dnr) {

amount = amt;

location = loc;

donorName = dnr;

}

**public** Donation(Donation d) {

amount = d. amount;

location = d. location;

donorName = d. donorName;

}

**public** String getDonorName() {

**return** donorName;

}

**public** **double** getAmount() **throws** Exception {

**if**(amount < 0)

{

**throw** **new** Exception("Error, amount < 0");

}

**return** amount;

}

**public** **void** display() {

System.*out*.println("Amount: " + amount);

System.*out*.println("Location: " + location);

System.*out*.println("Donor: " + donorName);

}

}

**import** java.io.IOException;

**public** **interface** IOInterface

{

**public** **void** saveToFile(String filename, String donor ) **throws** IOException;

**public** **void** loadFromFile(String filename, Check arrCheck[]) **throws** IOException;

}