

# 7. Databases and JDBC

## 3. JDBC Additional Tasks

# 1. Pay List

- You should create a pay list for merchants accordingly their parameters: period of payment and minimal payment sum
- Please, create a DB table for saving pay list

# 1. Pay List – DB Structure

```
create table transMoney (  
    id int not null generated always as identity,  
    merchantId int constraint merchmoney_fk  
references merchant,  
    sumSent decimal(19,2),  
    sentDate timestamp,  
    status char(1),  
    primary key (id)  
);
```

# 1. Pay List – periodEnum

```
public enum periodEnum {UNKNOWN, WEEKLY,  
TENDAYS, MONTHLY};
```

# 1. Pay List – getMerchantInfo Method

```
public ArrayList<MerchantInfo> getMerchantInfo(Connection
    conn) throws SQLException{
    Statement stmt = conn.createStatement();
    ArrayList<MerchantInfo> list = new ArrayList<MerchantInfo>();
    String sql = "select id, period, needToSend, lastSent, minSum
        from merchant";
    ResultSet rs = stmt.executeQuery(sql);
```

# 1. Pay List – MerchantInfo Inner Class

```
class MerchantInfo{  
    private int id;  
    private java.sql.Date lastSent;  
    private double sum;  
    private periodEnum period;  
    private double minSum;  
    public MerchantInfo(){  
        // accessors  
    }  
}
```

# 1. Pay List – getMerchantInfo Method

```
while (rs.next()){  
    MerchantInfo info = new MerchantInfo();  
    info.setId(rs.getInt("id"));  
    info.setLastSent(rs.getDate("lastSent"));  
    info.setPeriod(periodEnum.values()[rs.getInt("period")]);  
    info.setSum(rs.getDouble("needToSend"));  
    info.setMinSum(rs.getDouble("minSum"));  
    list.add(info);  
}  
return list;  
}
```

# 1. Pay List – filterList Method

```
public ArrayList<MerchantInfo> filterList(ArrayList<MerchantInfo>
    list){
    ArrayList<MerchantInfo> listRet = new ArrayList<MerchantInfo>();
    for (MerchantInfo info: list){
        if (info.getMinSum() > info.getSum()) continue;
        Instant instant = Instant.ofEpochMilli(info.getLastSent().getTime());
        LocalDate dt = LocalDateTime.ofInstant(instant,
            ZoneId.systemDefault()).toLocalDate();
        LocalDate current = LocalDate.now();
```



# 1. Pay List – filterList Method

```
switch(info.getPeriod()){  
  case WEEKLY:  
    if (dt.until(current, ChronoUnit.WEEKS) < 1) continue;  
    break;  
  case TENDAYS:  
    if (dt.until(current, ChronoUnit.DAYS) < 10) continue;  
    break;  
  case MONTHLY:  
    if (dt.until(current, ChronoUnit.MONTHS) < 1) continue;  
    break;
```

# 1. Pay List – filterList Method

```
    default:  
        break;  
    }  
    listRet.add(info);  
}  
return listRet;  
}
```

# 1. Pay List – addToTrans Method

```
public void addToTrans(Connection conn, ArrayList<MerchantInfo>
    list) throws SQLException{
    String sql = "INSERT INTO transMoney(merchantId, sumSent,
sentDate, status) values(?,?,?, '0')";
    PreparedStatement stmt = conn.prepareStatement(sql);
    for(MerchantInfo info: list){
        stmt.setInt(1, info.getId());
        stmt.setDouble(2, info.getSum());
        java.sql.Timestamp dt = new java.sql.Timestamp(new
java.util.Date().getTime());
        stmt.setTimestamp(3, dt);
        stmt.executeUpdate();
    }
}
```

# 1. Pay List – main Method

```
public static void main(String[] args) {  
    try{  
        Connection conn = getConnection();  
        TransMoney t = new TransMoney();  
        ArrayList<MerchantInfo> list = t.getMerchantInfo(conn);  
        list = t.filterList(list);  
        t.addToTrans(conn, list);  
        conn.close();  
    } catch(Exception ex){  
        System.out.println("Error " + ex.getMessage());  
    }  
}
```

# 1. Pay List

- See 729TransMoney project for the full text

## 2. Money Transfer

- Create a method that gets an accessible transfer sum as a parameter and sends money to merchants accordingly to the pay list under condition that general transfer sum should not grater then accessible transfer sum.

## 2. Money Transfer – transMoney Table

```
create table transMoney (  
    id int not null generated always as identity,  
    merchantId int constraint merchmoney_fk references  
merchant,  
    sumSent decimal(19,2),  
    sentDate timestamp,  
    status char(1),  
    primary key (id)  
);
```

# TransferInfo Inner Class

```
class TransferInfo{
    private int id;
    private int merchantId;
    private double sumSent;
    private java.sql.Date sentDate;
    private String status;

    public TransferInfo(){}
    // accessors
}
```



## 2. Money Transfer - getUnpaid

```
public ArrayList<TransferInfo> getUnpaid(Connection conn)
    throws SQLException{
    Statement stmt = conn.createStatement();
    ArrayList<TransferInfo> list = new ArrayList<TransferInfo>();
    String sql = "select id, merchantId, sumSent, sentDate, status
        from transMoney where status='0' order by sentDate,
sumSent";
    ResultSet rs = stmt.executeQuery(sql);
```

## 2. Money Transfer - getUnpayed

```
while (rs.next()){  
    TransferInfo info = new TransferInfo();  
    info.setId(rs.getInt("id"));  
    info.setMerchantId(rs.getInt("merchantId"));  
    info.setSumSent(rs.getDouble("sumSent"));  
    info.setSentDate(rs.getDate("sentDate"));  
    info.setStatus(rs.getString("status"));  
    list.add(info);  
}  
return list;  
}
```

## 2. Money Transfer - procUnpaid

```
public void procUnpaid(Connection conn,  
    ArrayList<TransferInfo> list, double sum) throws SQLException{  
    double sentSum = 0.0;  
    for(TransferInfo info: list){  
        if (sentSum + info.getSumSent() > sum) continue;  
        sentSum += info.getSumSent();  
        try{  
            conn.setAutoCommit(false);  
            sendPayment(conn, info);  
            updateMerchant(conn, info);  
            conn.commit();  
        }
```

## 2. Money Transfer - procUnpayed

```
    } catch (Exception ex){  
        ex.printStackTrace();  
        conn.rollback();  
    }  
}  
}
```

## 2. Money Transfer - sendPayment

```
public void sendPayment(Connection conn, TransferInfo info)
    throws SQLException{
    String sql = "UPDATE transMoney set sentDate=?, status='1'
where id=?";
    PreparedStatement stmt = conn.prepareStatement(sql);
    java.sql.Timestamp dt = new java.sql.Timestamp(new
java.util.Date().getTime());
    stmt.setTimestamp(1, dt);
    stmt.setInt(2, info.getId());
    stmt.executeUpdate();
}
```

## 2. Money Transfer - updateMerchant

```
public void updateMerchant(Connection conn, TransferInfo info)
    throws SQLException{
    String sql = "SELECT needToSend, sent FROM merchant where
        id=?";
    PreparedStatement stmtRead = conn.prepareStatement(sql);
    stmtRead.setInt(1, info.getMerchantId());
    ResultSet rs = stmtRead.executeQuery();
    rs.next();
    double needToSend = rs.getDouble("needToSend");
    double sent = rs.getDouble("sent");
```

## 2. Money Transfer - updateMerchant

```
sql = "UPDATE merchant set lastSent=?, needToSend=?, sent=?  
where id=?";
```

```
PreparedStatement stmt = conn.prepareStatement(sql);
```

```
java.sql.Timestamp dt = new java.sql.Timestamp(new  
    java.util.Date().getTime());
```

```
stmt.setTimestamp(1, dt);
```

```
stmt.setDouble(2, needToSend - info.getSumSent());
```

```
stmt.setDouble(3, sent + info.getSumSent());
```

```
stmt.setInt(4, info.merchantId);
```

```
stmt.executeUpdate();
```

```
}
```

## 2. Money Transfer - main

```
public static void main(String[] args) throws SQLException{
    Connection conn = null;
    try{
        double sum1 = Double.valueOf(args[0]);
        conn = getConnection();
        MainTrans t = new MainTrans();
        ArrayList<TransferInfo> list = t.getUnpayed(conn);
        t.procUnpayed(conn, list, sum1);
    }
}
```



## 2. Money Transfer - main

```
catch(SQLException ex){
    System.out.println("Error " + ex.getMessage());
}
catch(Exception ex){
    System.out.println("Error " + ex.getMessage());
}
finally{
    if (conn!= null) conn.close();
}
}
```

See [729aTransMoney](#) project for the full text