

Assignment 3

Title: Application development using JDBC, multithreading, concurrency using Synchronous and asynchronous callbacks, threadpools using Executor Service

Objectives: 1) To learn database connectivity
2) To learn concurrency.

Outcome:

Student should be able to implement

- 1) JDBC connectivity
- 2) Concurrency in the application

Software & Hardware apparatus:

Fedora / Windows

JDK, Eclipse

JDBC MySQL connector

Theory:

Java JDBC is a Java API to connect and execute query with the database. JDBC API uses JDBC drivers to connect with the database.

Following basic steps in JDBC.

- 1) Import the package
- 2) Load and register the driver.
- 3) Establish a connection to the database
- 4) Create a connection object from the connection
- 5) Use the statement object to execute query.
- 6) Process Result.
- 7) Close / terminate the objects.

Multi-threading in Java:

Different phases in thread life cycle.

- New Born - New thread is created.

Running - Thread is running on processor core.

Runnable - Thread is waiting for access of processor core.
Blocked - Thread is suspended.
Dead - Execution of thread is stopped.

Threadpool in Java:

Threadpool is a concept in Java. It refers to the collection of thread i.e. a group of fixed size of thread.

Advantages of Thread pool:

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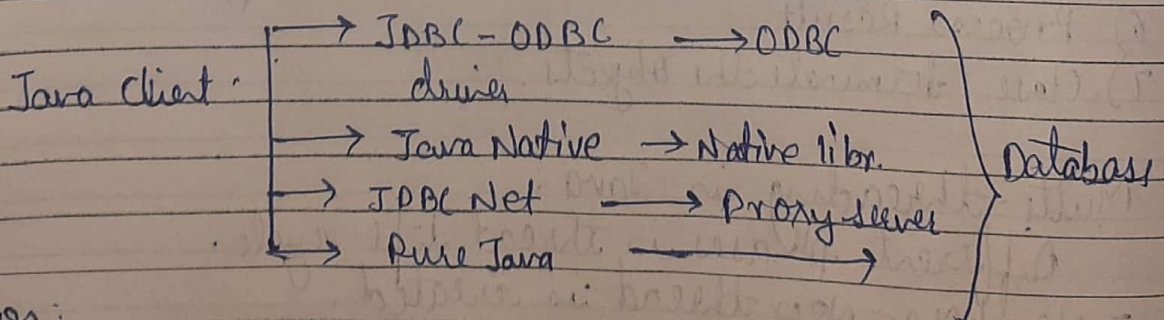
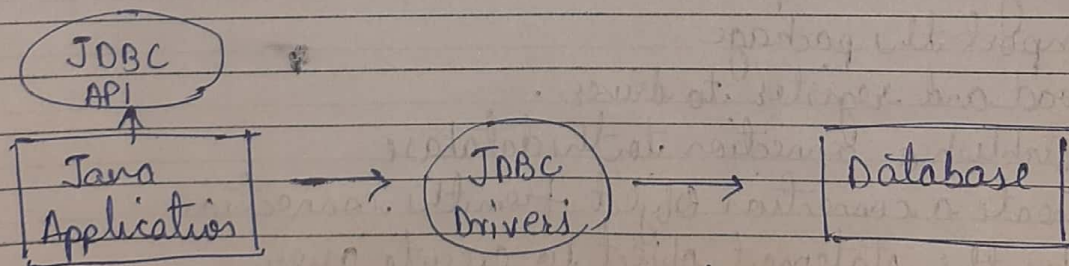
Advantages of Thread Pool:-

Thread Pool reuses the threads that's why it reduces the time for creating new threads. Java threadpool can be used with Servlet of JSP.

A thread is taken from thread pool and task is allocated to it. Similarly other threads are taken from thread pool and tasks are allocated to them. When task is completed, thread is returned to the pool.

A returned thread in thread pool can be pulled back again & can be allocated a new task.

JDBC drivers:



Conclusion:

Students are able to implement multi-threading & JDBC connectivity and database usage.

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TERMINAL  PROBLEMS 70 OUTPUT DEBUG CONSOLE 1: Java Process Console
WE NEED TO CONFIRM THAT YOU ARE A PART OF RESTAURENT

LOGIN
Enter username : admin
Enter password: password

Logged in successfully

8
MENU
1. VIEW USERS
2. VIEW MENU
3. ADD NEW DISH
4. ADD ORDER
5. ORDERS HISTORY
6. VIEW ORDER
7. Logout
8. Chat With Server

Enter your choice : 1
2

Users
1. admin
2. user

MENU
1. VIEW USERS
2. VIEW MENU
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4. ADD ORDER
5. ORDERS HISTORY
6. VIEW ORDER
7. Logout
8. Chat With Server

Enter your choice : 2
#####

MENU
```

```

37 public class MainServer {

TERMINAL  PROBLEMS 60 OUTPUT DEBUG CONSOLE 1: Java Process Console
Connecting to the database...
Connected to database....
User table has been created...
Open file in editor (ctrl + click)

Dish Sub Items inserted

DISHES DATA HAS BEEN CREATED

Waiting For Client connection for Menu ...

Connection between Client And Server established for Menu...Socket[addr=/127.0.0.1,port=53956,
localport=8080]

Before Thread
Waiting For Client connection for Menu ...

Thread : pool-2-thread-1
0
Thread : pool-2-thread-1
Login Attempted from client

Thread : pool-2-thread-1
SELECT * FROM users WHERE user_name='admin' AND user_password='password';
Login Successful

Connection between Client And Server established for Menu...Socket[addr=/127.0.0.1,port=53957,
localport=8080]

Before Thread
Waiting For Client connection for Menu ...

Thread : pool-2-thread-2
2
Thread : pool-2-thread-2
Request for Food Menu from client

Food Menu request completed
```

master* 0 70 In 584 Col 33 Spaces: 4 UTF-8 CRLF java javaSE-13

master* 0 60 In 77, Col 1 Spaces: 4 UTF-8 CRLF java javaSE-13


```

=====
=====

#####

MENU
1. VIEW USERS
2. VIEW MENU
3. ADD NEW DISH
4. ADD ORDER
5. ORDERS HISTORY
6. VIEW ORDER
7. Logout
8. Chat With Server

Enter your choice : 8
Enter your name : Pradyumna
Chat With Server (Use 'EXIT' to close)
[Pradyumna] Your Message :Hey
Waiting for server response..
[Server] Message : Hi Pradyumna
[Pradyumna] Your Message :Is my order ready ?

Waiting for server response..
[Server] Message : Yes pradyumna its ready
[Pradyumna] Your Message :[]

1: Java Process Console
e.encoding=UTF-8' '-cp' 'D:\SDL\Assignment 3
Client\bin' 'Login'
WE NEED TO CONFIRM THAT YOU ARE A PART OF RES
TAURENT

LOGIN
Enter username : admin
Enter password: password

Logged in successfully

8
MENU
1. VIEW USERS
2. VIEW MENU
3. ADD NEW DISH
4. ADD ORDER
5. ORDERS HISTORY
6. VIEW ORDER
7. Logout
8. Chat With Server

Enter your choice : 8
Enter your name : Sahil
Chat With Server (Use 'EXIT' to close)
[Sahil] Your Message :Hi server this is sahil
here ....
Waiting for server response..
[Server] Message : Hey sahil
[Sahil] Your Message :Cool
Waiting for server response..
[Server] Message : Your order is ready too
[Sahil] Your Message :Okay
Waiting for server response..
█

Thread : pool-2-thread-3
2
Thread : pool-2-thread-3
Request for Food Menu from client

Food Menu request completed

Connection between Client And Server established for Menu...Socket[addr=/127.0.0.1,port=54032,
localport=8080]

Before Thread
Waiting For Client connection for Menu ...

Thread : pool-2-thread-4
13
Thread : pool-2-thread-4
Request Order History from client

Order History request completed

Connection between Client And Server established for Menu...Socket[addr=/127.0.0.1,port=54033,
localport=8080]

Before Thread
Waiting For Client connection for Menu ...

Thread : pool-2-thread-1
15
Thread : pool-2-thread-1
Chat Box Request received

Thread Running : pool-2-thread-1
[Sahil] Message : Hi server this is sahil here ....
[Server] Your Message toSahil: Hey sahil
Waiting for client response..
[Pradyumna] Message : Is my order ready ?
[Server] Your Message toPradyumna: Yes pradyumna its ready
Waiting for client response..
[Sahil] Message : Cool
[Server] Your Message toSahil: Your order is ready too
Waiting for client response..
[Sahil] Message : Okay
[Server] Your Message toSahil: []

```

4 rows in set (0.03 sec)

```
mysql> use sdl_restraurent;
Database changed
mysql> SHOW TABLES;
```

```
-----+-----+
Tables_in_sdl_restraurent |
+-----+-----+
chattable
dishes
messagetable
order_item
orders
sub_categories
users
+-----+-----+
rows in set (0.02 sec)
```

```
mysql> SELECT * FROM users;
```

```
-----+-----+-----+
user_id | user_name | user_password |
+-----+-----+-----+
1 | admin | password |
2 | user | password |
+-----+-----+-----+
rows in set (0.00 sec)
```

```
mysql> SELECT * FROM dishes;
```

```
-----+-----+-----+-----+
dish_id | cat_id | dish_name | dish_price |
+-----+-----+-----+-----+
1 | 1 | Veg Tawa Sizzler | 600 |
2 | 1 | Veg Ala Kiev Sizzler | 600 |
3 | 1 | Soya Chaap Sizzler | 650 |
4 | 1 | Cheese Cutlet Sizzler | 600 |
5 | 2 | Tomato Soup | 80 |
6 | 2 | Palak Soup | 80 |
7 | 2 | Manchaw Soup | 95 |
8 | 2 | Sweet Corn Soup | 95 |
9 | 3 | Roti | 15 |
10 | 3 | ButterRoti | 20 |
11 | 3 | Naan | 25 |
12 | 3 | Butter Naan | 30 |
13 | 3 | Paratha | 25 |
14 | 3 | Butter Paratha | 30 |
15 | 3 | Chapati | 10 |
16 | 3 | Butter Chapati | 15 |
17 | 4 | Veg Machurian | 150 |
18 | 4 | Paneer Machurian | 170 |
19 | 4 | Veg Schezwan | 170 |
+-----+-----+-----+-----+
```

```
MySQL 8.0 Command Line Client
2 | 1 | Veg Ala Kiev Sizzler | 600 |
3 | 1 | Soya Chaap Sizzler | 650 |
4 | 1 | Cheese Cutlet Sizzler | 600 |
5 | 2 | Tomato Soup | 80 |
6 | 2 | Palak Soup | 80 |
7 | 2 | Manchaw Soup | 95 |
8 | 2 | Sweet Corn Soup | 95 |
9 | 3 | Roti | 15 |
10 | 3 | ButterRoti | 20 |
11 | 3 | Naan | 25 |
12 | 3 | Butter Naan | 30 |
13 | 3 | Paratha | 25 |
14 | 3 | Butter Paratha | 30 |
15 | 3 | Chapati | 10 |
16 | 3 | Butter Chapati | 15 |
17 | 4 | Veg Machurian | 150 |
18 | 4 | Paneer Machurian | 170 |
19 | 4 | Veg Schezwan | 170 |
20 | 4 | Paneer Chilly | 170 |
21 | 4 | Veg Crispy | 160 |
22 | 5 | Veg Biryani | 150 |
23 | 5 | Paneer Biryani | 170 |
24 | 5 | Hyderabadi Biryani | 170 |
25 | 5 | Veg Pulav | 150 |
26 | 6 | Green Salad | 90 |
27 | 6 | Cheese Cherry Pineapple | 135 |
28 | 7 | Vanilla Ice Cream | 30 |
29 | 7 | Mango Ice Cream | 35 |
30 | 7 | Strawberry Ice Cream | 30 |
31 | 7 | Chocolate Ice Cream | 45 |
32 | 8 | Fresh Lime Juice | 50 |
33 | 8 | Fresh Lime Soda | 60 |
34 | 8 | Soft Drinks | 30 |
35 | 8 | Mango Lassi | 20 |
36 | 1 | Sizzler 1 | 10 |
+-----+
36 rows in set (0.00 sec)

mysql> SELECT * FROM message;
+-----+
| chat_id | message | server_message | time |
+-----+
| 1 | Hey | Hi Pradyumna | 2020-10-04 00:45:54 |
| 1 | Hi server this is sahil here .... | Hey sahil | 2020-10-04 00:46:50 |
| 1 | Is my order ready ? | Yes pradyumna its ready | 2020-10-04 00:47:05 |
| 2 | Cool | Your order is ready too | 2020-10-04 00:47:26 |
| 2 | Okay | Hey sahil | 2020-10-04 00:47:59 |
+-----+
5 rows in set (0.00 sec)
```