

MaxCompute

Tools and Downloads

Tools and Downloads

Overview

The latest ODPS service provides a new version of the client, compared with the old version, the new client has the following improvements:

- You do not need to enter a command shell to execute a specified command. For example, you can enter the client and run SQL commands and security commands directly in new version. You do not need to enter SQL/Security shell at first and run corresponding commands.
- The commands of new version is more closed to Hive commands. Most of commands are compatible with Hive.

Besides, you must note:

- This document is a part of User Manual for the client in ODPS. It describes how to use basic functions of ODPS by using the command lines of the client.
- Do not perform the analysis operation based on the output format of the client. The output format of the client is not ensured for forward compatibility. Clients in different versions are different in their command formats and behaviors.
- ODPS client is a java program and can run only in the JRE environment. Therefore, it is required to download and install JRE 1.6 version.
- If you need to learn about the use method of the client, refer to [Quick Start](#).

Download and Installation

To download ODPS client, please click on [Here](#).

Decompress the downloaded file and you can find the following four folders:

```
bin/  conf/  lib/  plugins/
```

There is a file named `odps_conf.ini` in 'conf' . Edit this file and enter related information:

```
project_name=  
access_id=<accessid>  
access_key=<accesskey>
```

```
end_point=http://xxxx
```

Note:

- Replace the access_id and access_key with the access_id and access_key applied from www.aliyun.com.
- If you often use a project, you can add the name of this project behind of "project_name=" , which can avoid executing "use project_name;" command when entering the client.
- end_point. The access URL differs for different regions. For more information, see Access domains and data centers.

After the configuration file has been modified, run 'odpscmd' in bin directory. (If the OS is Linux, run './bin/odpscmd' ; if the OS is Windows, run './bin/odpscmd.bat' .)Now you can run ODPS commands:

```
odps@ test_project> whoami;
Name: ALIYUN$test_user@aliyun.com
End_Point: http://service.ap-southeast-1.maxcompute.aliyun.com/api
Project: test_project
```

Get Help

View the information about help. Commnd Format:

```
odps@ > ./bin/odpscmd -h;
```

Or you can type "h" or "help" in an interactive mode. (Case insensitive)

Starting Parameters

When starting the client, you can specify a series of parameters:

```
Usage: odpscmd [OPTION]...
where options include:
--help (-h)for help
--project=<prj_name> use project
--endpoint=<http://host:port> set endpoint
-u <user_name> -p <password> user name and password
-k <n> will skip beginning queries and start from specified position
-r <n> set retry times
-f <"file_path;"> execute command in file
-e <"command;[command;]..."> execute command, include sql command
```

-C will display job counters

Example: (take '-f' as an example)

- Prepare the local script file 'script.txt'. Suppose that the file is located in the disk D and the content is shown as follows:

```
DROP TABLE IF EXISTS test_table_mj;
CREATE TABLE test_table_mj (id string, name string);
DROP TABLE test_table_mj;
```

- Running Command:

```
odpscmd\bin>odpscmd -f d:/script.txt;
```

- Display the execution result:

ID = 20150528122432906gux77io3

Log view:

```
http://webconsole.odps.aliyun-inc.com:8080/logview/?h=http://service-corp.odps.aliyun-inc.com/api&p=odps_public_dev&i=20150528122432906gux77io3&token=RnlrSzJoL242YW43dFFIc1dmb1ZWZzFwQ1RFPsXPRFBTX09CTzoxMDcwMDI1NjI3ODA1NjI5LDE0MzM0MjA2NzMseyJTdGF0ZW1lbnQiOlt7IkFjdGlvbii6WYJvZHBzOIJJYWQjXSwiRWZmZWN0IjojQWxsY3ciLCJSZXNvdXJjZSI6WYJhY3M6b2RwczoqOnBib2plY3RzL29kcHNfcHVibGljX2Rldi9pbmN0YW5jZXMvMjAxNTA1MjgxmjI0MzI5MDZndXg3N2lvMyJdfV0sIlZlcnNpb24iOiIxIn0=
OK
```

ID = 20150528122439318gcmkk6u1

Log view:

```
http://webconsole.odps.aliyun-inc.com:8080/logview/?h=http://service-corp.odps.aliyun-inc.com/api&p=odps_public_dev&i=20150528122439318gcmkk6u1&token=dSt0RXdlV0M5YjZET2I1MnJuUFkzWDN1aWpzPSXPRFBTX09CTzoxMDcwMDI1NjI3ODA1NjI5LDE0MzM0MjA2ODAsyJTdGF0ZW1lbnQiOlt7IkFjdGlvbii6WYJvZHBzOIJJYWQjXSwiRWZmZWN0IjojQWxsY3ciLCJSZXNvdXJjZSI6WYJhY3M6b2RwczoqOnBib2plY3RzL29kcHNfcHVibGljX2Rldi9pbmN0YW5jZXMvMjAxNTA1MjgxmjI0MzI5MDZndXg3N2lvMyJdfV0sIlZlcnNpb24iOiIxIn0=
OK
```

ID = 20150528122440389g98cmlmf

Log view:

```
http://webconsole.odps.aliyun-inc.com:8080/logview/?h=http://service-corp.odps.aliyun-inc.com/api&p=odps_public_dev&i=20150528122440389g98cmlmf&token=NWlwL0EvQThxUXhzcTRERDc5NFg0b2IxZ3QwPSXPRFBTX09CTzoxMDcwMDI1NjI3ODA1NjI5LDE0MzM0MjA2ODAsyJTdGF0ZW1lbnQiOlt7IkFjdGlvbii6WYJvZHBzOIJJYWQjXSwiRWZmZWN0IjojQWxsY3ciLCJSZXNvdXJjZSI6WYJhY3M6b2RwczoqOnBib2plY3RzL29kcHNfcHVibGljX2Rldi9pbmN0YW5jZXMvMjAxNTA1MjgxmjI0NDZlbnQjZWxtZiJdfV0sIlZlcnNpb24iOiIxIn0=
OK
```

Interactive Mode

Directly running the client will enter the interactive mode.

```
[admin: ~]$odpscmd
Aliyun ODPS Command Line Tool
Version 1.0
@Copyright 2012 Alibaba Cloud Computing Co., Ltd. All rights reserved.
odps@ odps> INSERT OVERWRITE TABLE DUAL SELECT * FROM DUAL;
```

Input the command at the cursor position (take a semicolon as a statement end mark) and press Enter to run.

Continuous Running

- When you use '-e' or '-f' option to run command, you can specify the parameter '-k' if there are multiple statements and you want to start running from a middle statement, which indicates ignoring the previous statements and running from the specified position. If the specified parameter ≤ 0 , start running from the first statement.
- Each statement separated by a semicolon is considered as a valid statement. The statements which runs successfully or fail to run will be printed at running time.
- For example, there are three SQL statements in the file '/tmp/dual.sql' :

```
drop table dual;
create table dual (dummy string);
insert overwrite table dual select count(*) from dual;
```

To ignore the first two statements:

```
odpscmd -k 3 -f dual.sql
```

Get Current Logon User

Command Format:

```
whoami;
```

Use Example:

```
odps@ hiveut> whoami;
```

```
Name: odpstest@aliyun.com
ID: 1090142773636588
End_Point: http://10.249.215.1/odps_debug1
Project: lijunsecuritytest
```

Use: get the Alibaba Cloud account and endpoint configuration of current log user.

Exit

Command:

```
odps@ > quit;
or q;
```

Eclipse Plugins

To facilitate the development work with Java SDK of MapReduce and UDF, MaxCompute provides Eclipse Development Plug-in. This plug-in can simulate the running process of MapReduce and UDF to provide local debugging methods for users and provide the function for generating a simple template.

Note:

- To download this plug-in, click [Here](#).
- Unlike the local running mode provided by MapReduce, Eclipse plug-in cannot synchronize data with MaxCompute. The data used by users need to be manually copied to the warehouse directory of Eclipse plugin.

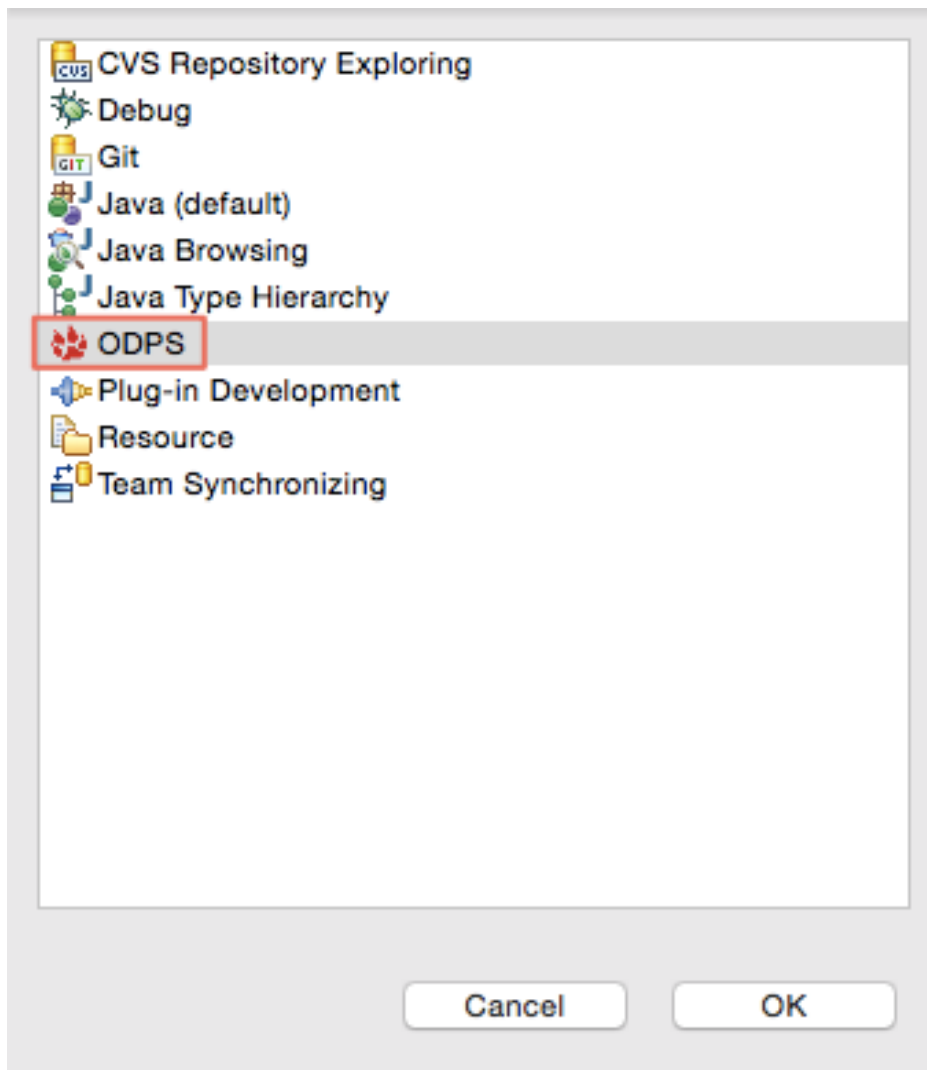
After downloading the Eclipse plug-in, decompress the software package to find the following jar:

```
odps-eclipse-plugin-bundle-0.15.0.jar
```

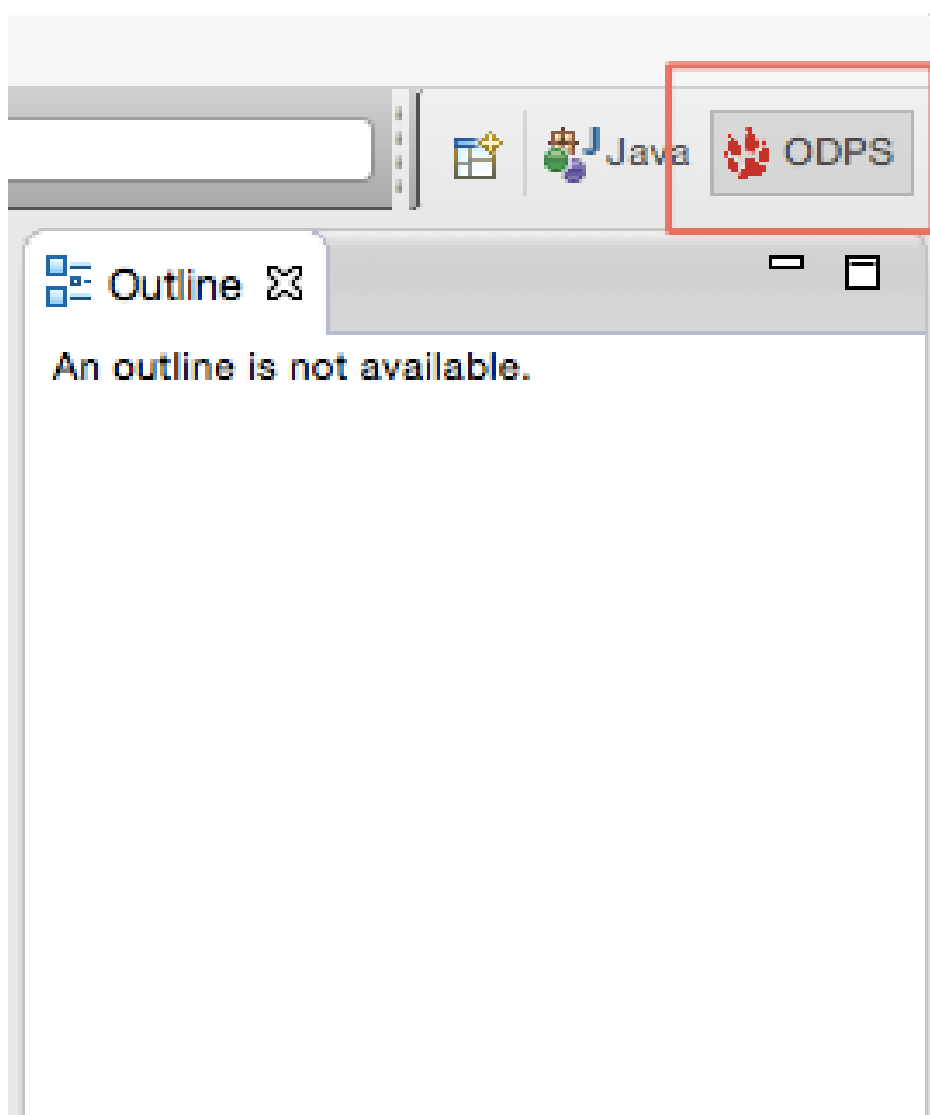
Place the plug-in into the subdirectory 'plugins' in Eclipse installation directory. Start the Eclipse plug-in, and click <Open Perspective> at the upper-right corner.



After clicking the button, the following dialog box is displayed:



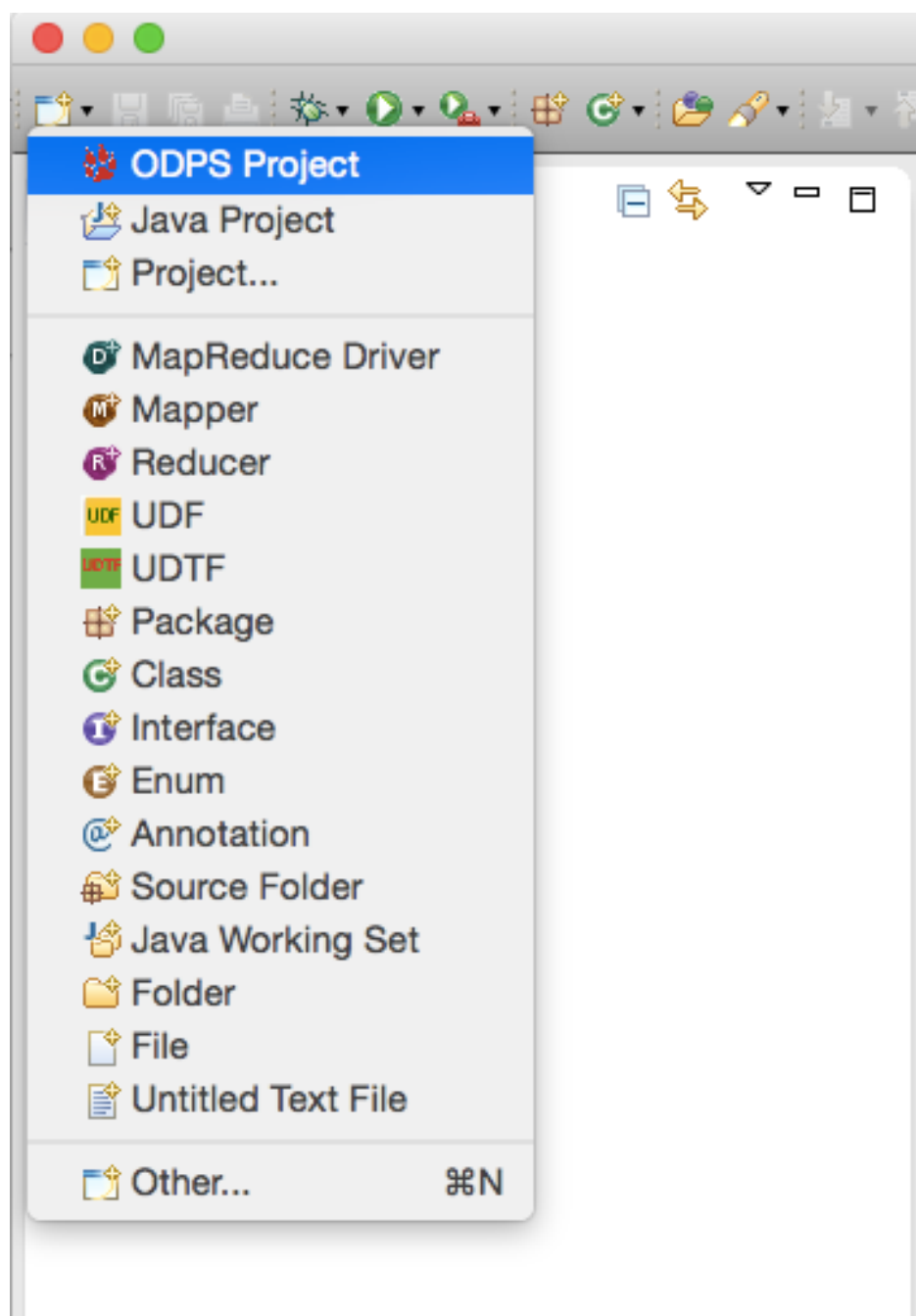
Select [ODPS] and click on **OK**. the MaxCompute icon will appear at the upper-right corner, indicating that the plug-in takes effect.



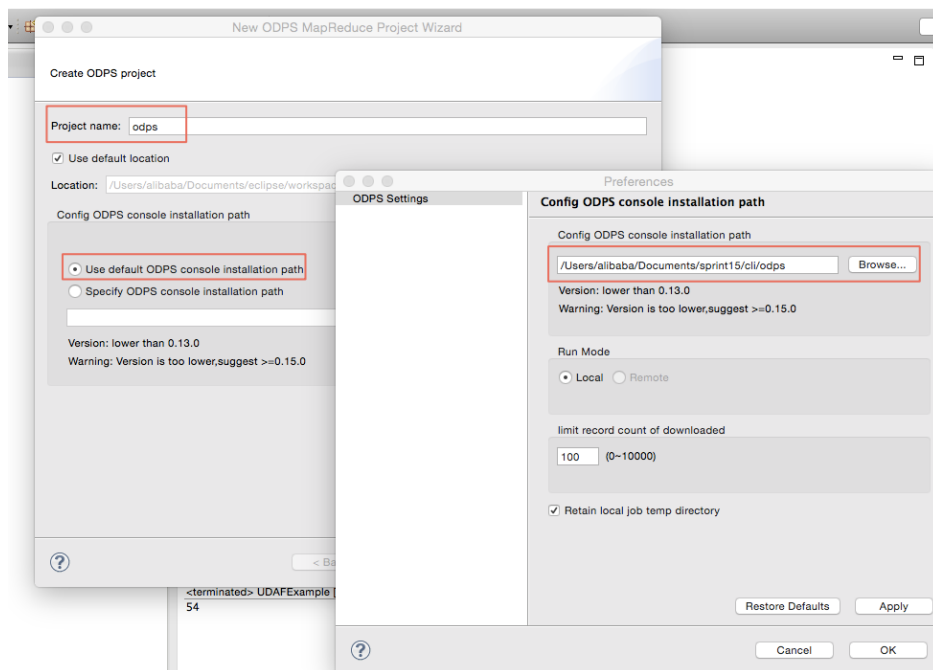
There are two methods to create MaxCompute project.

Method 1

Select [File > New > Project > MaxCompute > MaxCompute Project] to create the project (in the example, use 'ODPS' as the project name):



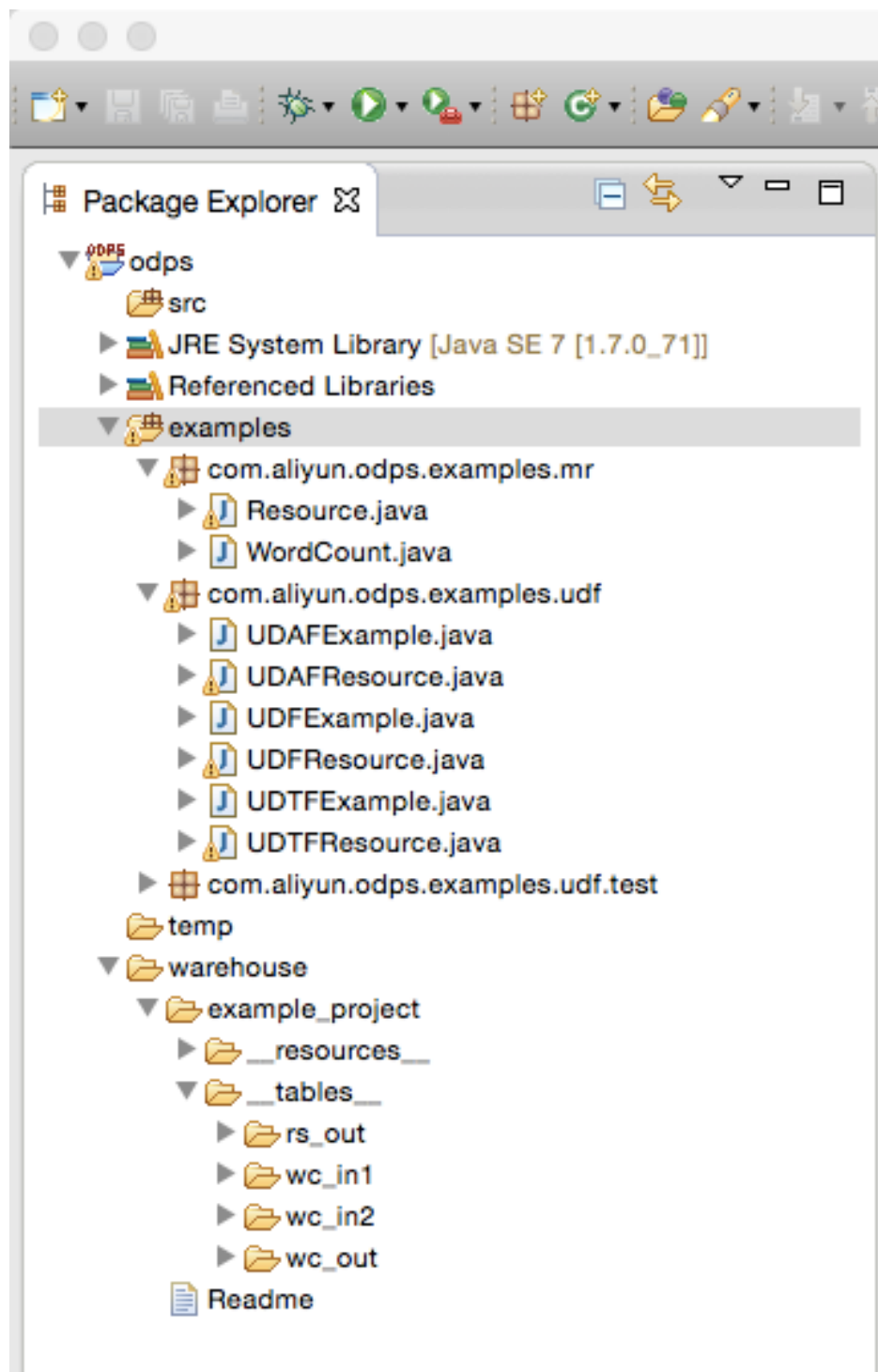
After creating MaxCompute project, the following dialog box will be popped up. Input Project name, and select the path of MaxCompute console. (The console must be uploaded at first.) At last, click <Finish>.



Note:

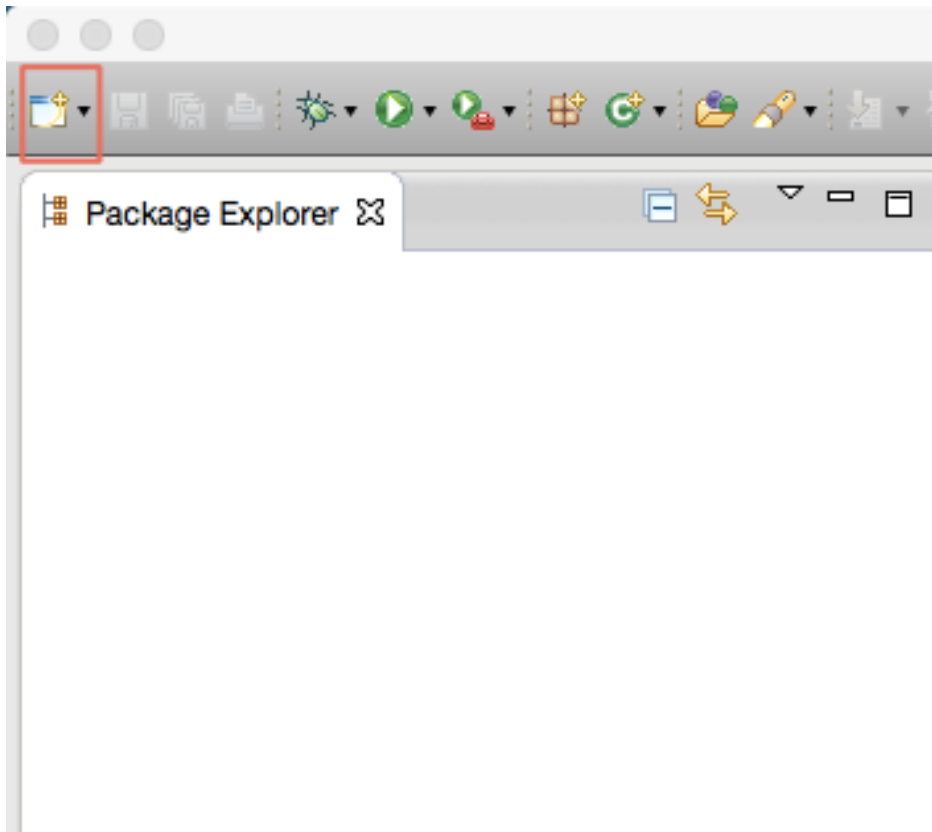
- For the introduction of MaxCompute console, please refer to **Console**.

creating project is finished, the following directory structure will be viewed in the left 'Package Explorer' :

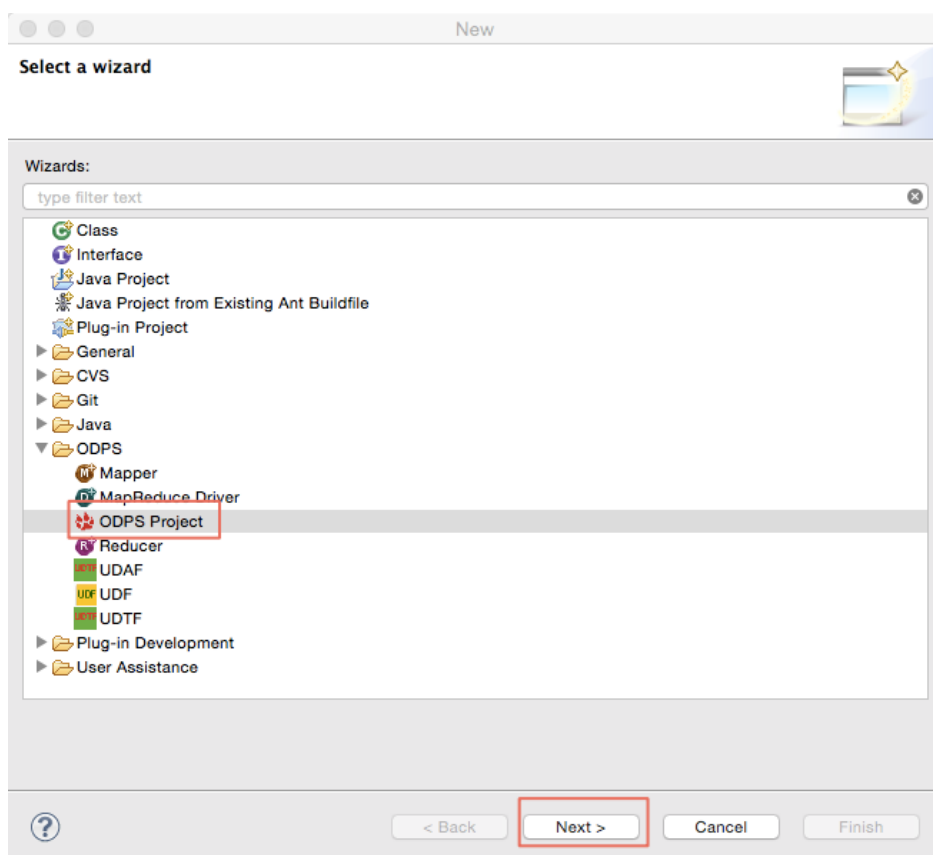


Method 2

Click <New> at the left-upper corner:



After the dialog box is popped up, select 'ODPS Project' and click on <Next>:



The subsequent operations are similar with Method 1.

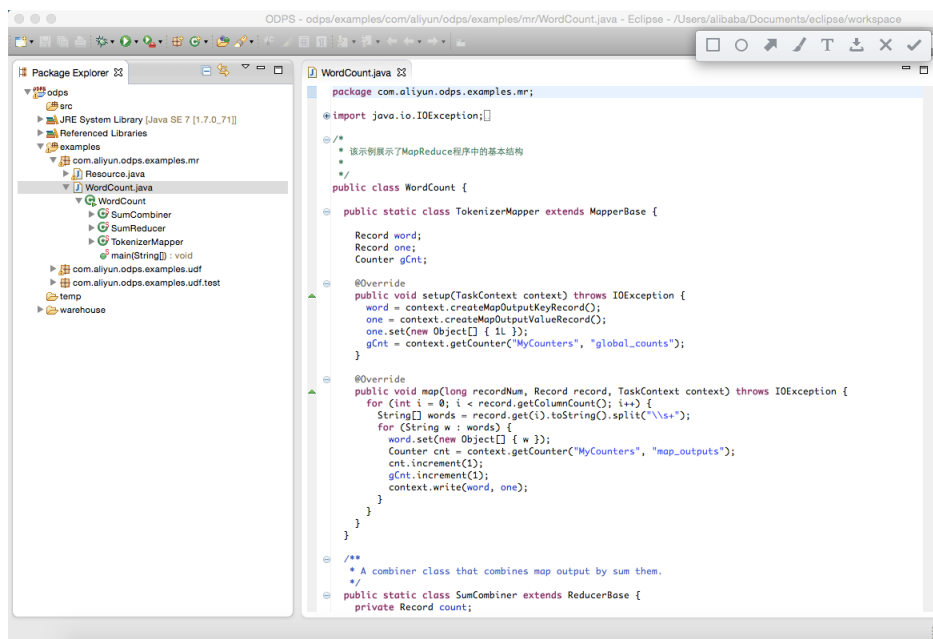
The installation of MaxCompute Eclipse plug-in is completed. User can use this plug-in to write MapReduce or UDF programs.

Note:

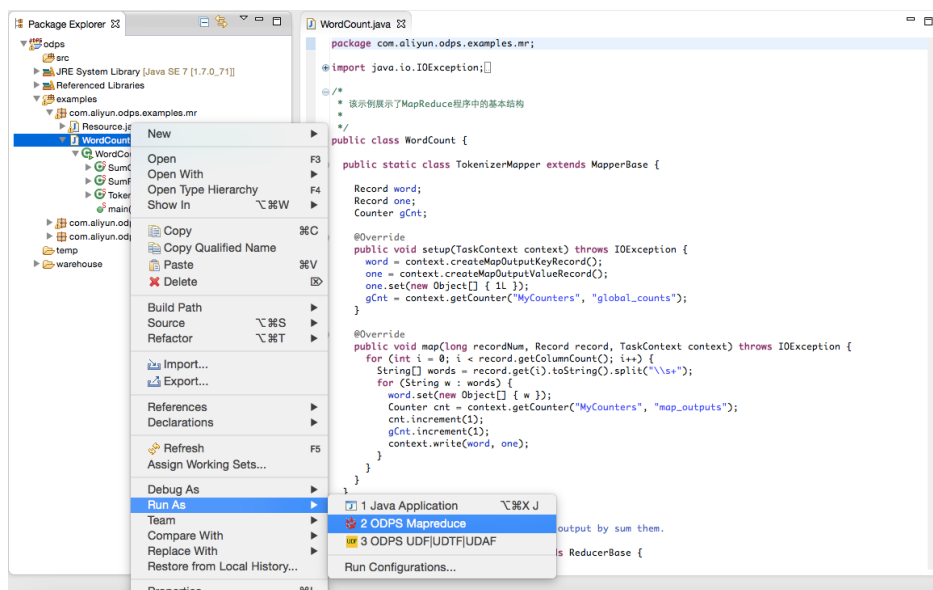
- For the function introduction of MapReduce in the plug-in, refer to [MapReduce Development Plug-in Introduction](#).
- For the UDF program example, please refer to [UDF Development Plug-in Introduction](#).

Run WordCount Example Quickly

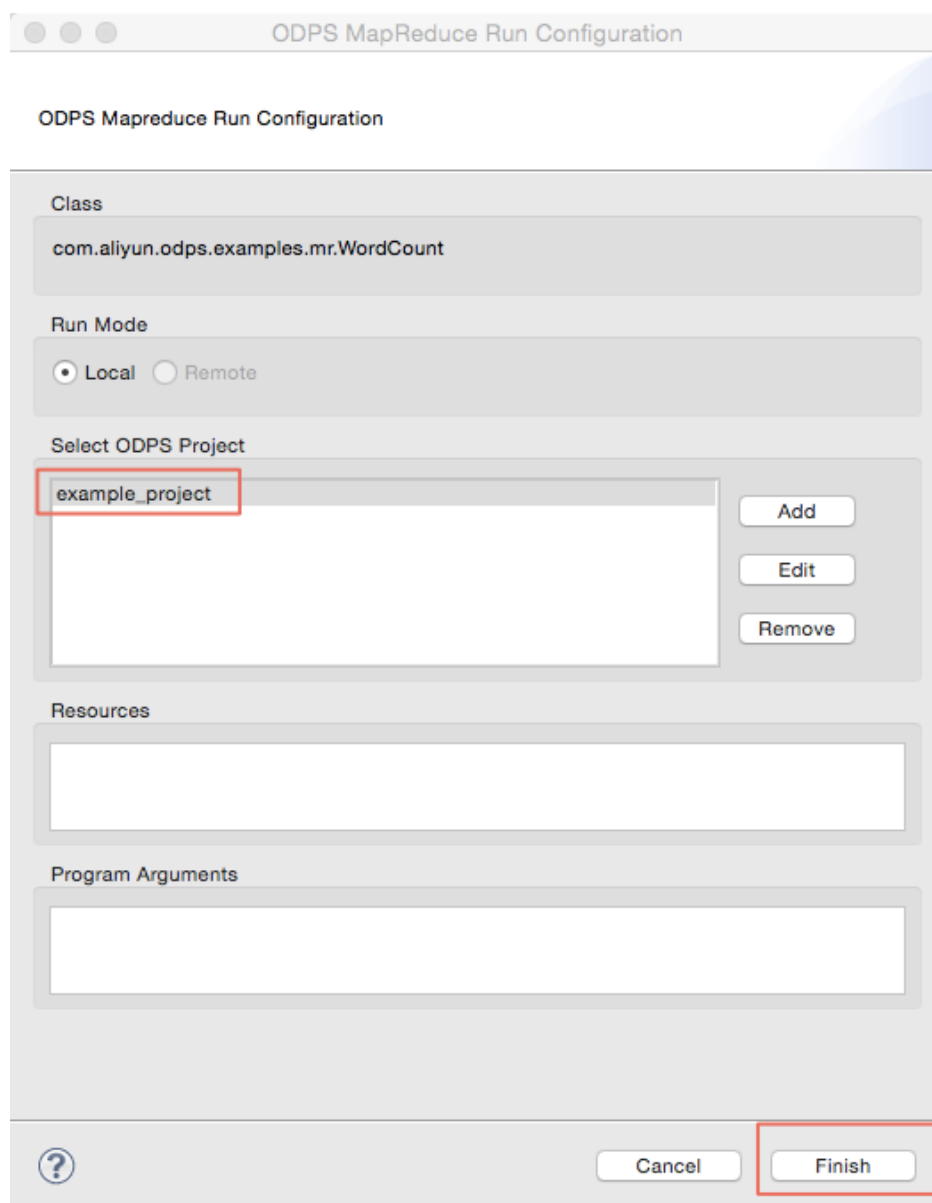
Select WordCount example in MaxCompute project:



Right-click on 'WordCount.java' and click **Run As -> ODPS MapReduce**, as follows:



After the dialog box is popped up, select 'example_project' and click **Finish**:



The image shows a 'ODPS MapReduce Run Configuration' dialog box. It has a title bar with three window control buttons and the text 'ODPS MapReduce Run Configuration'. The main area contains several sections: 'Class' with a text field containing 'com.aliyun.odps.examples.mr.WordCount'; 'Run Mode' with two radio buttons, 'Local' (selected) and 'Remote'; 'Select ODPS Project' with a list box containing 'example_project' (highlighted with a red box), and three buttons 'Add', 'Edit', and 'Remove'; 'Resources' with an empty text field; and 'Program Arguments' with an empty text field. At the bottom, there is a help icon (question mark in a circle), a 'Cancel' button, and a 'Finish' button (highlighted with a red box).

ODPS MapReduce Run Configuration

Class

com.aliyun.odps.examples.mr.WordCount

Run Mode

☒ Local ☐ Remote

Select ODPS Project

example_project

Add

Edit

Remove

Resources

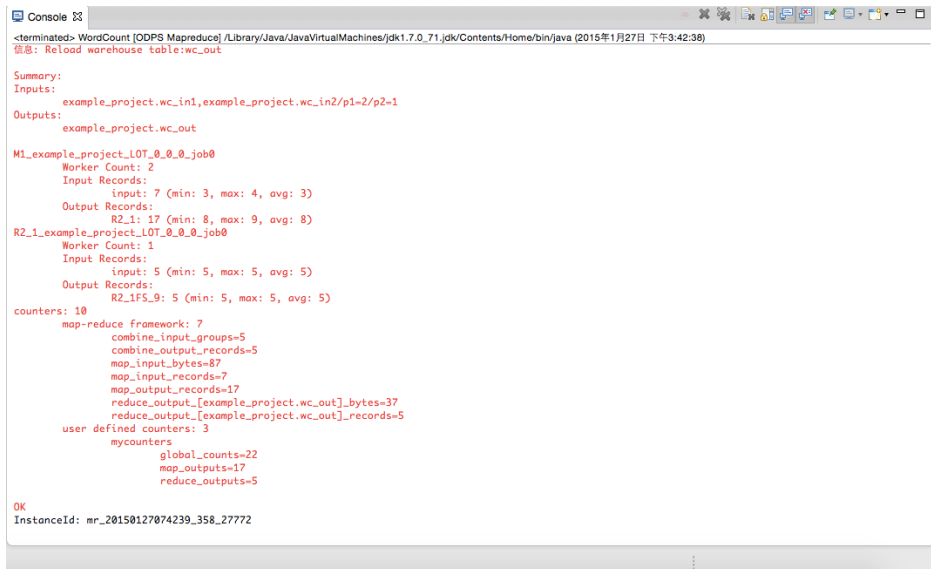
Program Arguments

?

Cancel

Finish

After running is successful, the following result will be displayed:



```
<terminated> WordCount [ODPS MapReduce] /Library/Java/JavaVirtualMachines/jdk1.7.0_71.jdk/Contents/Home/bin/java (2015年1月27日 下午3:42:38)
信息: Reload warehouse table:wc_out

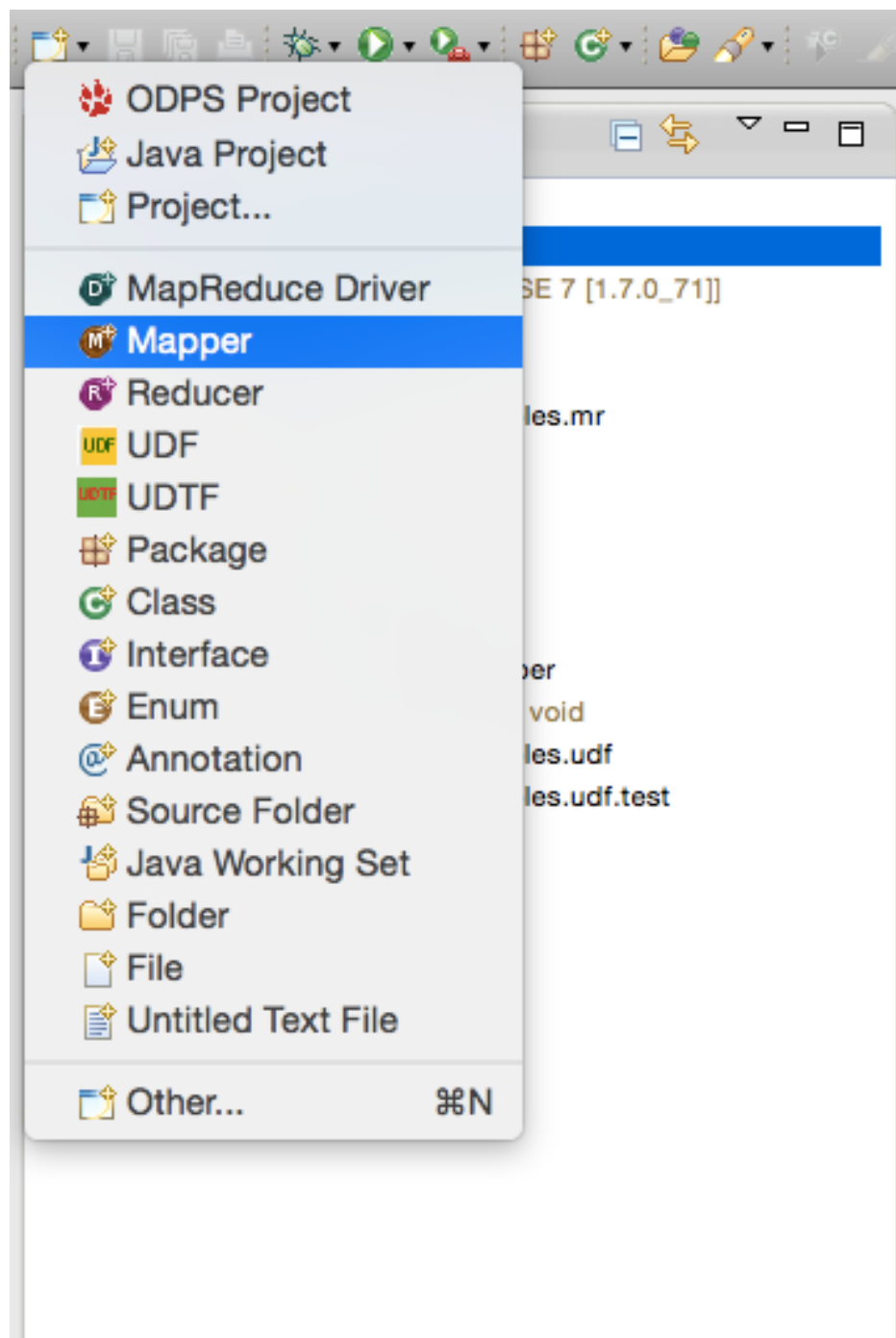
Summary:
Inputs:
  example_project.wc_in1,example_project.wc_in2/p1=2/p2=1
Outputs:
  example_project.wc_out

M1_example_project_L0T_0_0_0_job0
  Worker Counts: 2
  Input Records:
    input: 7 (min: 3, max: 4, avg: 3)
  Output Records:
    R2_1: 17 (min: 8, max: 9, avg: 8)
R2_1_example_project_L0T_0_0_0_job0
  Worker Counts: 1
  Input Records:
    input: 5 (min: 5, max: 5, avg: 5)
  Output Records:
    R2_1FS_9: 5 (min: 5, max: 5, avg: 5)
counters: 10
  map-reduce framework: 7
    combine_input_groups=5
    combine_output_records=5
    map_input_bytes=87
    map_input_records=7
    map_output_records=17
    reduce_output_[example_project.wc_out]_bytes=37
    reduce_output_[example_project.wc_out]_records=5
  user defined counters: 3
    mycounters
      global_counts=22
      map_outputs=17
      reduce_outputs=5

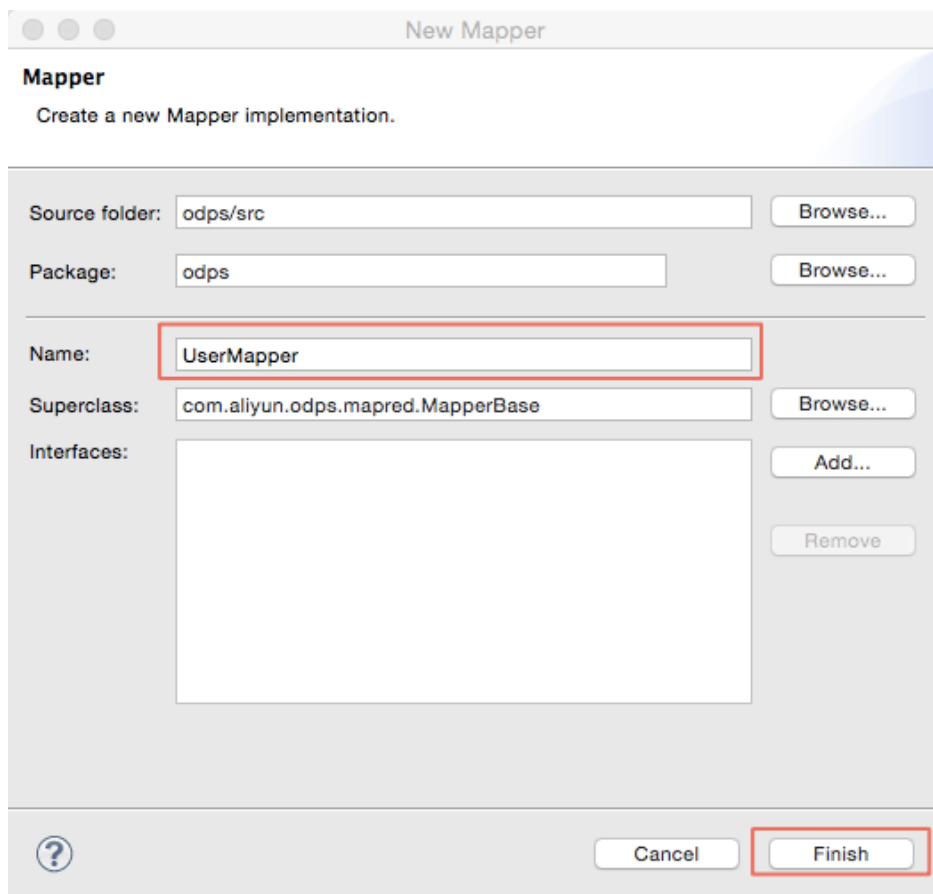
OK
InstanceId: mr_20150127074239_358_27772
```

Run Uer-defined MapReduce Program

Right-click 'src' directory. Select New -> Mapper:



After selecting 'Mapper' and the following dialog box is displayed. Input the name of Mapper class and click **Finish**:



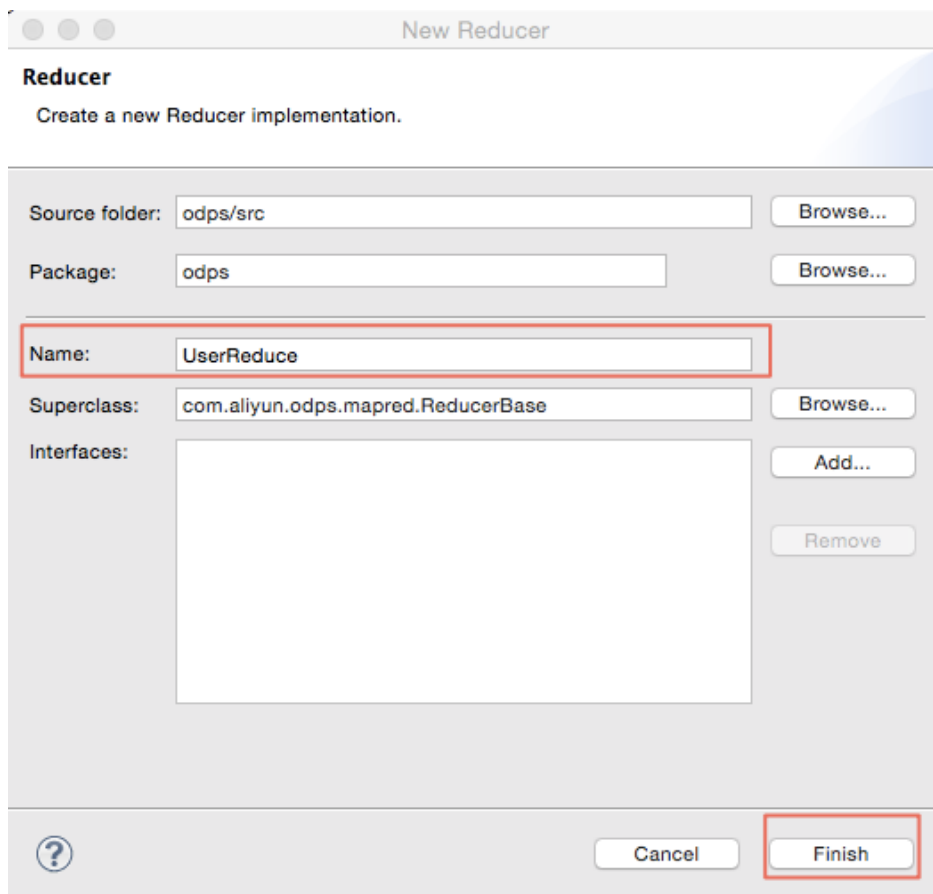
Now you can find a file 'UserMapper.java' is generated in the directory 'src' in 'Package Explorer' . The content of this file is a template of Mapper class:

```
package odps;
import java.io.IOException;
import com.aliyun.odps.data.Record;
import com.aliyun.odps.mapred.MapperBase;
public class UserMapper extends MapperBase {
    @Override
    public void setup(TaskContext context) throws IOException {
    }
    @Override
    public void map(long recordNum, Record record, TaskContext context)
    throws IOException {
    }
    @Override
    public void cleanup(TaskContext context) throws IOException {
    }
}
```

In the template, the configured package name defaults to 'odps' . You can modify it according to your actual requirement. Write the template contents as follows:

```
package odps;
import java.io.IOException;
import com.aliyun.odps.counter.Counter;
import com.aliyun.odps.data.Record;
import com.aliyun.odps.mapred.MapperBase;
public class UserMapper extends MapperBase {
    Record word;
    Record one;
    Counter gCnt;
    @Override
    public void setup(TaskContext context) throws IOException {
        word = context.createMapOutputKeyRecord();
        one = context.createMapOutputValueRecord();
        one.set(new Object[] { 1L });
        gCnt = context.getCounter("MyCounters", "global_counts");
    }
    @Override
    public void map(long recordNum, Record record, TaskContext context)
        throws IOException {
        for (int i = 0; i < record.getColumnCount(); i++) {
            String[] words = record.get(i).toString().split("\\s+");
            for (String w : words) {
                word.set(new Object[] { w });
                Counter cnt = context.getCounter("MyCounters", "map_outputs");
                cnt.increment(1);
                gCnt.increment(1);
                context.write(word, one);
            }
        }
    }
    @Override
    public void cleanup(TaskContext context) throws IOException {
    }
}
```

In the same method, right-click 'src' directory and select **New -> Reduce**:



Input the name of Reduce class. (In this example, use 'UserReduce' as the class name):

In 'Package Explorer', a file name 'UseReduce.java' is generated in the directory 'src'. This file content is a template of Reduce class. Edit the template:

```
package odps;
import java.io.IOException;
import java.util.Iterator;
import com.aliyun.odps.counter.Counter;
import com.aliyun.odps.data.Record;
import com.aliyun.odps.mapred.ReducerBase;
public class UserReduce extends ReducerBase {
    private Record result;
    Counter gCnt;
    @Override
    public void setup(TaskContext context) throws IOException {
        result = context.createOutputRecord();
        gCnt = context.getCounter("MyCounters", "global_counts");
    }
    @Override
    public void reduce(Record key, Iterator<Record> values, TaskContext context)
        throws IOException {
        long count = 0;
        while (values.hasNext()) {
            Record val = values.next();
```

```
count += (Long) val.get(0);
}
result.set(0, key.get(0));
result.set(1, count);
Counter cnt = context.getCounter("MyCounters", "reduce_outputs");
cnt.increment(1);
gCnt.increment(1);

context.write(result);
}
@Override
public void cleanup(TaskContext context) throws IOException {
}
}
```

Create 'main' function: right-click 'src' and select **New -> MapReduce Driver**. Enter Driver Name (in this example, use 'UserDriver' as the name), Mapper and Recduce (in this example use 'UserMapper' and 'UserReduce' as corresponding name) and click **Finish**. The file 'MyDriver.java file' is also displayed in 'src' directory:

New MapReduce Driver

MapReduce Driver
Create a new MapReduce driver.

Source folder:

Package:

Name:

Superclass:

Interfaces:

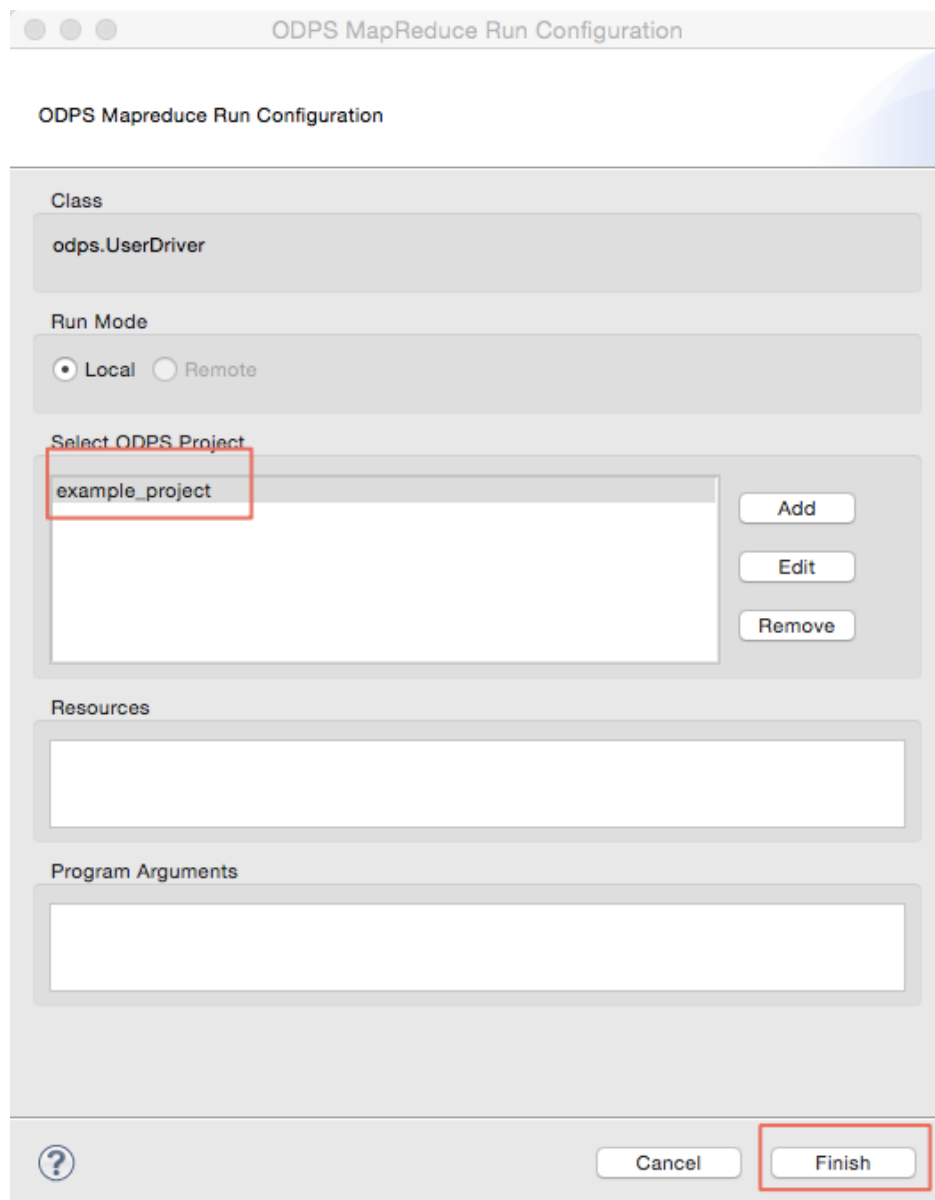
Mapper:

Reducer:

Edit the contents of driver:

```
package odps;
import com.aliyun.odps.OdpsException;
import com.aliyun.odps.data.TableInfo;
import com.aliyun.odps.examples.mr.WordCount.SumCombiner;
import com.aliyun.odps.examples.mr.WordCount.SumReducer;
import com.aliyun.odps.examples.mr.WordCount.TokenizerMapper;
import com.aliyun.odps.mapred.JobClient;
import com.aliyun.odps.mapred.RunningJob;
import com.aliyun.odps.mapred.conf.JobConf;
import com.aliyun.odps.mapred.utils.InputUtils;
import com.aliyun.odps.mapred.utils.OutputUtils;
import com.aliyun.odps.mapred.utils.SchemaUtils;
public class UserDriver {
    public static void main(String[] args) throws OdpsException {
        JobConf job = new JobConf();
        job.setMapperClass(TokenizerMapper.class);
        job.setCombinerClass(SumCombiner.class);
        job.setReducerClass(SumReducer.class);
        job.setMapOutputKeySchema(SchemaUtils.fromString("word:string"));
        job.setMapOutputValueSchema(SchemaUtils.fromString("count:bigint"));
        InputUtils.addTable(
            TableInfo.builder().tableName("wc_in1").cols(new String[] { "col2", "col3" }).build(), job);
        InputUtils.addTable(TableInfo.builder().tableName("wc_in2").partSpec("p1=2/p2=1").build(), job);
        OutputUtils.addTable(TableInfo.builder().tableName("wc_out").build(), job);
        RunningJob rj = JobClient.runJob(job);
        rj.waitForCompletion();
    }
}
```

Run MapReduce program. Right-click 'UserDriver.java' and select **Run As -> ODPS MapReduce** to appear the following dialog box:



The image shows a dialog box titled "ODPS MapReduce Run Configuration". It contains several sections: "Class" with a text field containing "odps.UserDriver"; "Run Mode" with radio buttons for "Local" (selected) and "Remote"; "Select ODPS Project" with a list box containing "example_project" (highlighted with a red box) and buttons for "Add", "Edit", and "Remove"; "Resources" with an empty text area; and "Program Arguments" with an empty text area. At the bottom, there is a help icon, a "Cancel" button, and a "Finish" button (highlighted with a red box).

Select 'example_project' as the MaxCompute Project and click **Finish** to run MapReduce program on the local:

```

<terminated> UserDriver [ODPS MapReduce] /Library/Java/JavaVirtualMachines/jdk1.7.0_71.jdk/Contents/Home/bin/java (2015年1月27日 下午4:22:42)

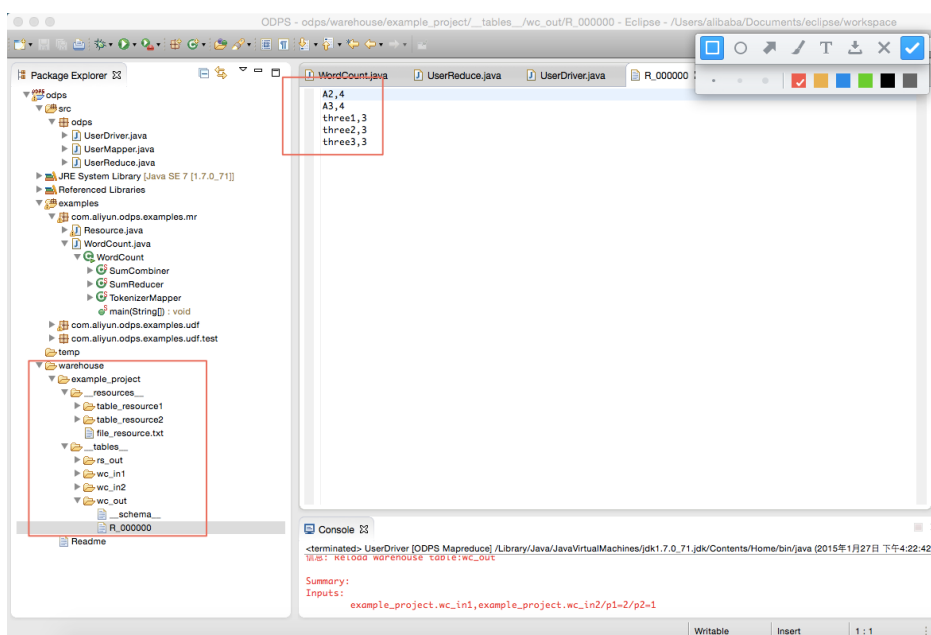
Summary:
Inputs:      example_project.wc_in1,example_project.wc_in2/p1=2/p2=1
Outputs:     example_project.wc_out

M1_example_project_LOT_0_0_0_job0
Worker Count: 2
Input Records:
  input: 7 (min: 3, max: 4, avg: 3)
Output Records:
  R2_1: 17 (min: 8, max: 9, avg: 8)
R2_1_example_project_LOT_0_0_0_job0
Worker Count: 1
Input Records:
  input: 5 (min: 5, max: 5, avg: 5)
Output Records:
  R2_1FS_9: 5 (min: 5, max: 5, avg: 5)
counters: 10
  map-reduce framework: 7
    combine_input_groups=5
    combine_output_records=5
    map_input_bytes=87
    map_input_records=7
    map_output_records=17
    reduce_output_[example_project.wc_out]_bytes=37
    reduce_output_[example_project.wc_out]_records=5
  user defined counters: 3
    mycounters
      global_counts=22
      map_outputs=17
      reduce_outputs=5

OK
InstanceId: mr_20150127082243_694_27864

```

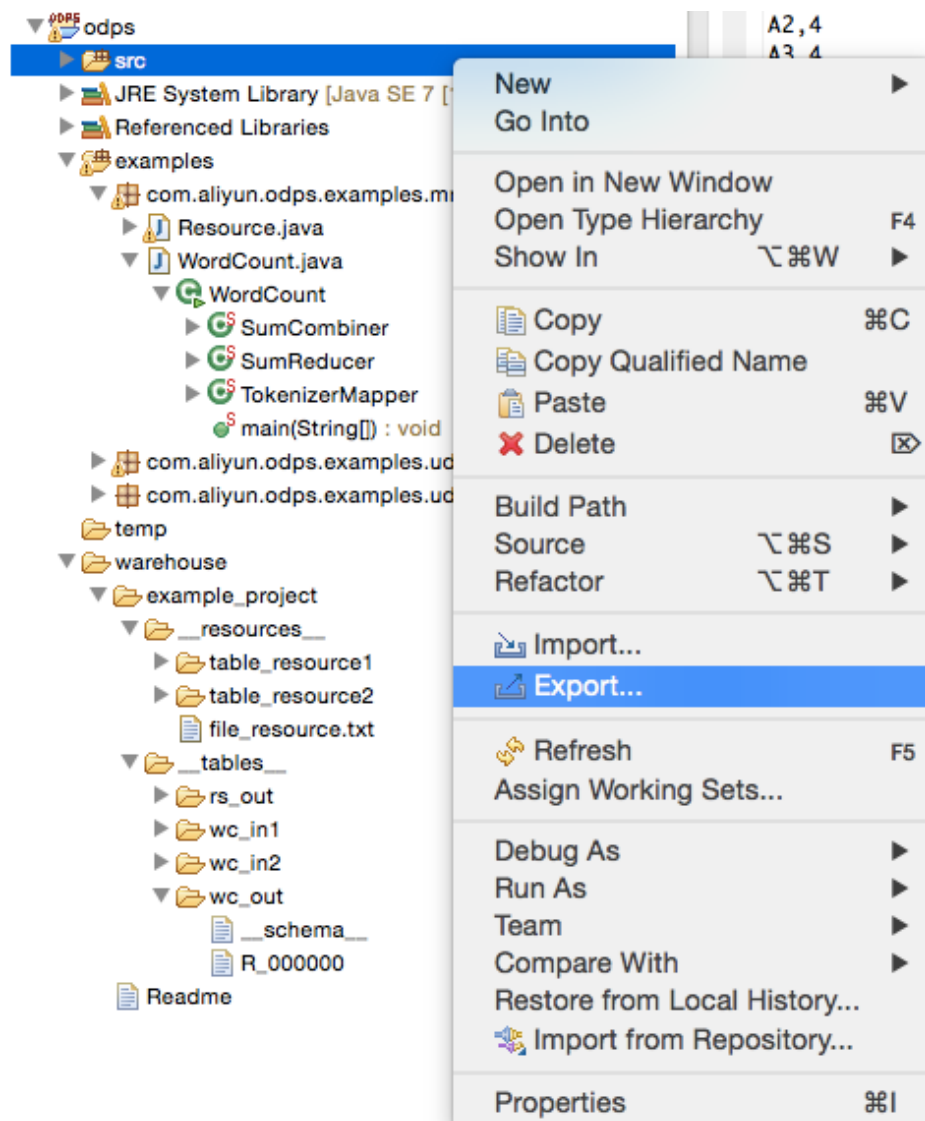
If the information is output as mentioned above, it indicates that local operation runs successfully. The output result is saved in the directory 'warehouse'. Refresh MaxCompute project:



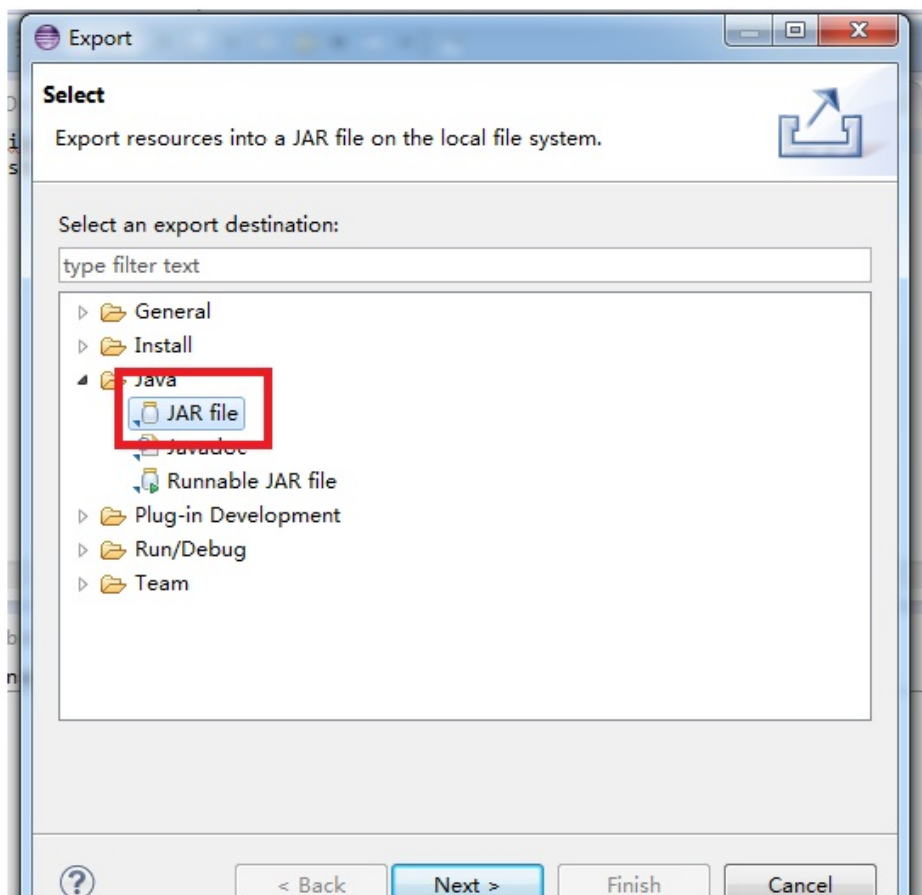
'wc_out' is the output directory and 'R_000000' is result file. Through local debugging, the result is confirmed to be correct and you can package MapReduce program through Eclipse export function. After it is packaged, upload the jar package to MaxCompute. About how to execute MapReduce in distributed environment, refer to Quick Start.

After the local debugging passed, user can package the codes into jar package through

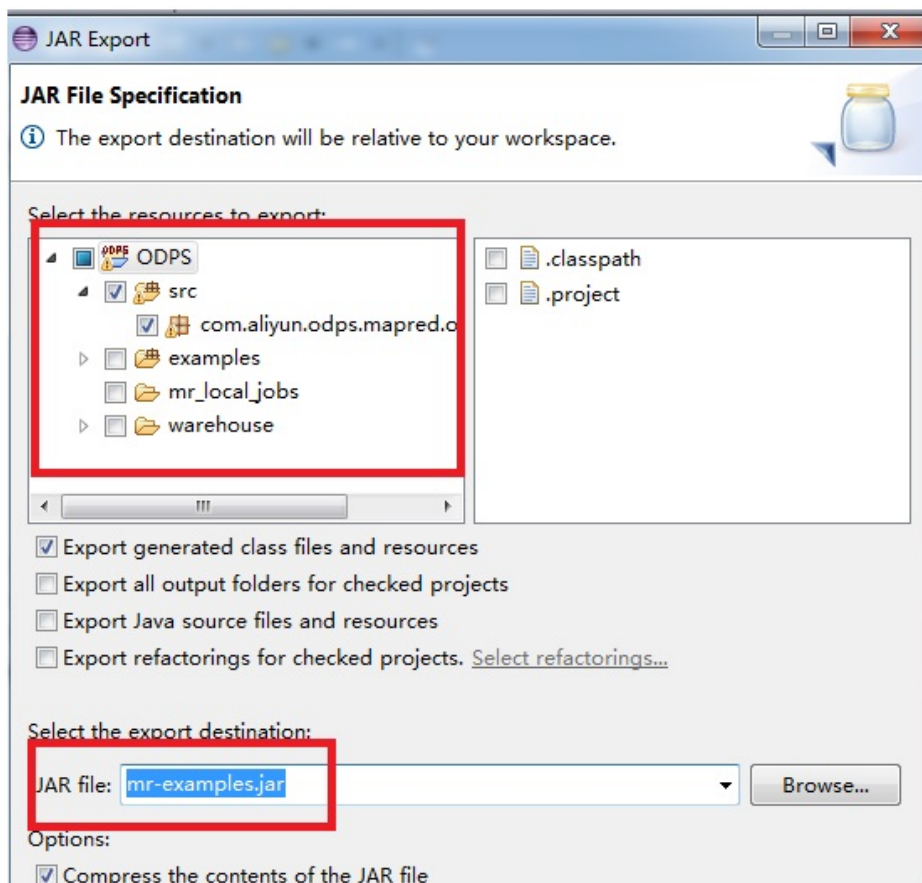
Eclipse Export function, provided for subsequent distributed environment. In this example, we nominate the package 'mr-examples.jar'. Select the directory 'src' and click Export:



Select 'Jar File' as an export mode:



You just need to export the package in 'src' . Specify the name of Jar File to be 'mr-examples.jar' :



Click **Next** to export the jar file successfully.

If you want to simulate new Project creation in the local, you can create a subdirectory (has same level with example_project) in the directory 'warehouse'. The directory hierarchy structure is shown as follows:

```
<warehouse>
|__example_project(Project Directory)
|__ <_tables__>
| |__table_name1(non-partition table)
| | |__data(File)
| | |
| | |__ <_schema__> (File)
| | |
| |__table_name2(Partition Table)
| |__partition_name=partition_value(partition directory)
| | |__data(file)
| | |
| |__ <_schema__> (file)
| |
|__ <_resources__>
|
|__table_resource_name (table resource)
| |__<_ref__>
|
```

```
|__ file_resource_name ( file resource )
```

'_schema_' Example:

Non-partiton table:

project=project_name

table=table_name

columns=col1:BIGINT,col2:DOUBLE,col3:BOOLEAN,col4:DATETIME,col5:STRING

Partition table:

project=project_name

table=table_name

columns=col1:BIGINT,col2:DOUBLE,col3:BOOLEAN,col4:DATETIME,col5:STRING

partitions=col1:BIGINT,col2:DOUBLE,col3:BOOLEAN,col4:DATETIME,col5:STRING

Note:

At present, the following five data formats are supported: bigint,double,boolean,datetime,string, which correspond to the data types in java: -long,double,boolean,java.util.Date,java.lang.String.

'data' Example:

```
1,1.1,true,2015-06-04 11:22:42 896,hello world
```

```
\N,\N,\N,\N,\N
```

Note:

The time format is accurate to the millisecond level and all types are represented NULL by '\N'.

Note:

- If mapReduce program runs in the local, the default is to search corresponding tables or resources from the directory 'warehouse' . If the tables or resources are not existent, corresponding data will be downloaded from the server and saved in 'warehouse' . Then run MapReduce in the local.
- After running MapReduce is finished, please refresh the directoty 'warehouse' to view generated result.

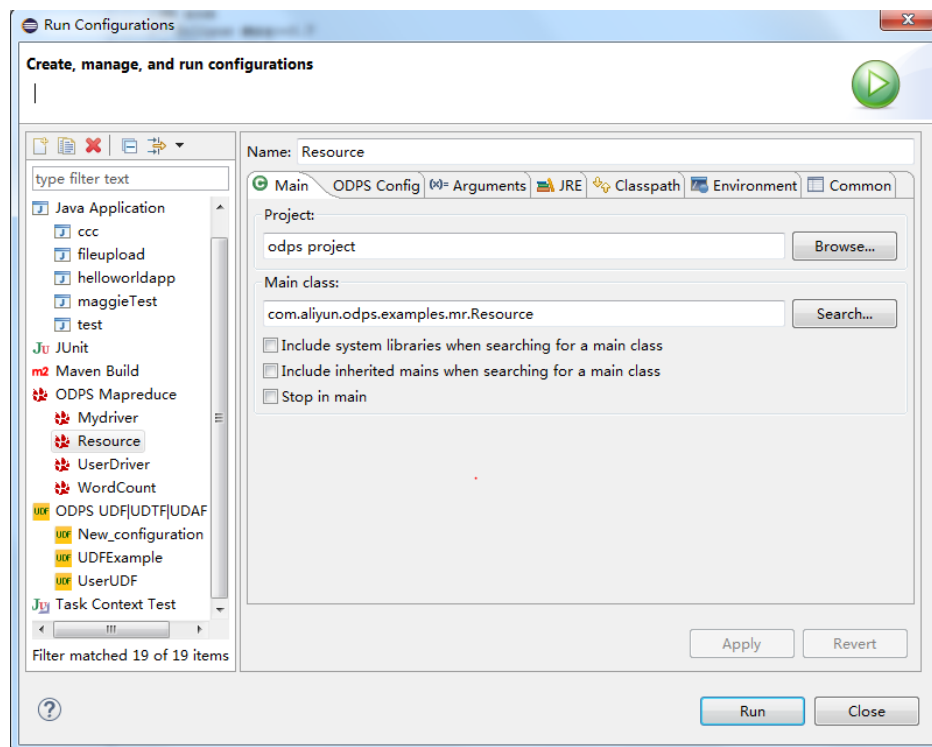
Local Debug UDF Program

This section describes how to develop UDF with the Eclipse plug-in and how to run UDF on local. The preparation and implement process is similar to UDF. You can refer to the example of UDF.

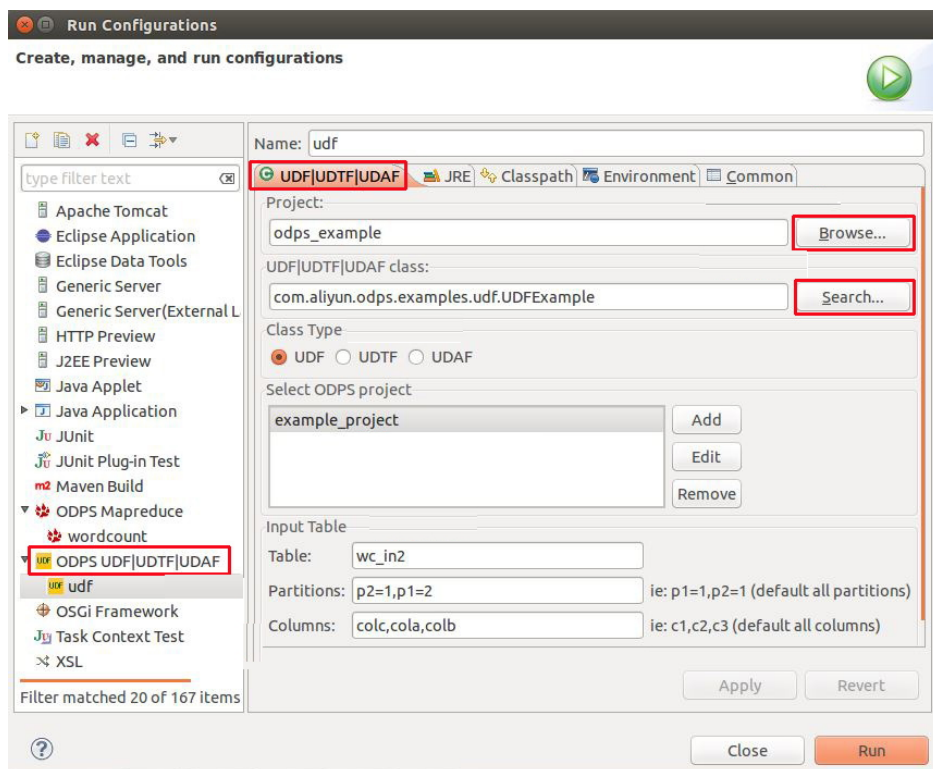
MaxCompute Eclipse plug-in provides two methods to run UDF: Menu Bar and quickly running by right-clicking it.

Run UDF through Menu Bar

Select **Run > Run Configurations...** from the menu bar and the following dialog box appears:



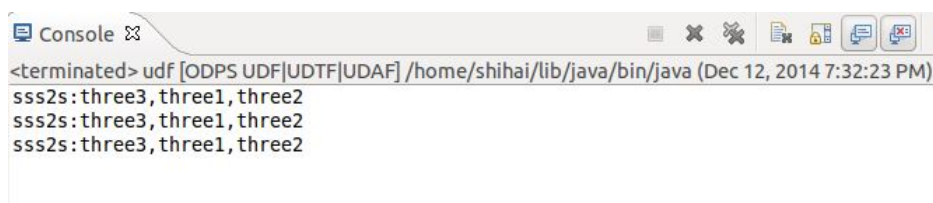
You can create a new Run Configuration. Select the UDF class and type to be executed, select MaxCompute Project and enter the information of input table. For example:



In the configuration mentioned above, "Table" indicates the input table of UDF.

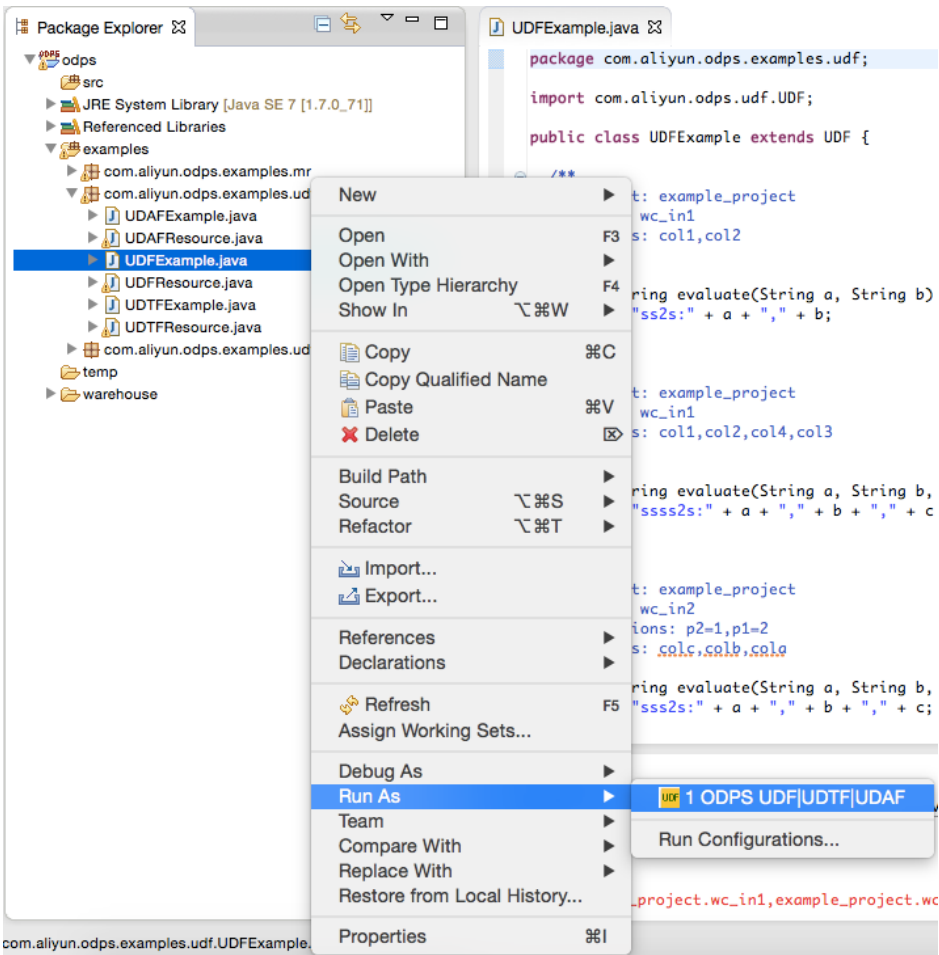
"Partitions" indicates the partitions from which the data is read, separated by commas. "Columns" indicates the columns, which will be considered as the parameters of UDF to be introduced. The columns are separated by commas.

Click **Run** to execute the program and the running result is displayed in the console:

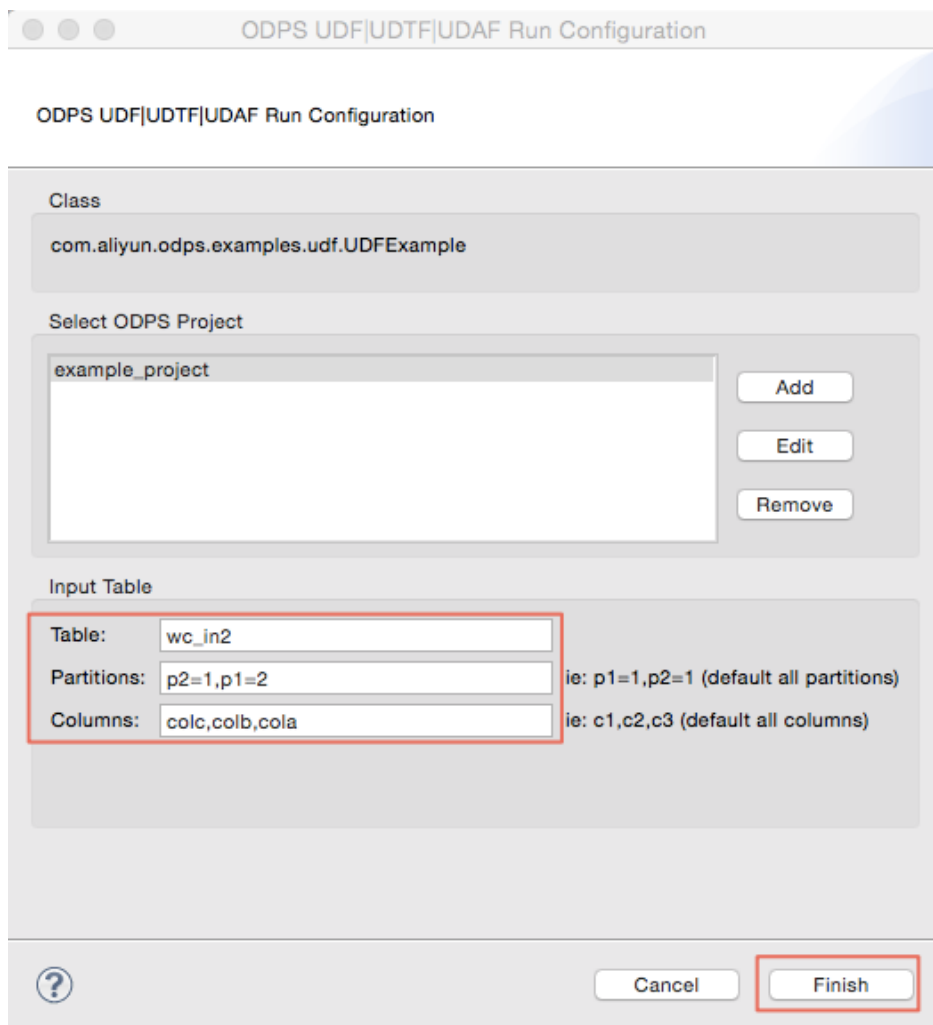


Running Quickly by Right-clicking it

Select a udf.java file (such as: UDFExample.java) and right click the mouse. Then select **Run As > Run UDF|UDAF|UDTF**:



The configuration information is shown as follows:



The image shows a 'Run Configuration' dialog box for ODPS UDF|UDTF|UDAF. It has a title bar with three window control buttons and the text 'ODPS UDF|UDTF|UDAF Run Configuration'. The main area is divided into sections: 'Class' with a text field containing 'com.aliyun.odps.examples.udf.UDFExample'; 'Select ODPS Project' with a list box containing 'example_project' and buttons 'Add', 'Edit', and 'Remove'; and 'Input Table' with three rows: 'Table:' with 'wc_in2', 'Partitions:' with 'p2=1,p1=2' (with a hint 'ie: p1=1,p2=1 (default all partitions)'), and 'Columns:' with 'colc,colb,cola' (with a hint 'ie: c1,c2,c3 (default all columns)'). At the bottom, there is a help icon, a 'Cancel' button, and a 'Finish' button which is highlighted with a red rectangle.

In the configuration mentioned above, "Table" indicates the input table of UDF.

"Partitions" indicates the partitions from which the data is read, separated by commas. "Columns" indicates the columns, which will be considered as the parameters of UDF to be introduced. The columns are separated by commas.

Click on **Finish** to run UDF and get the output result.

Running Customized UDF Program

Right click the mouse on a project and select **New >UDF** (or select the menu bar **File > New > UDF**).

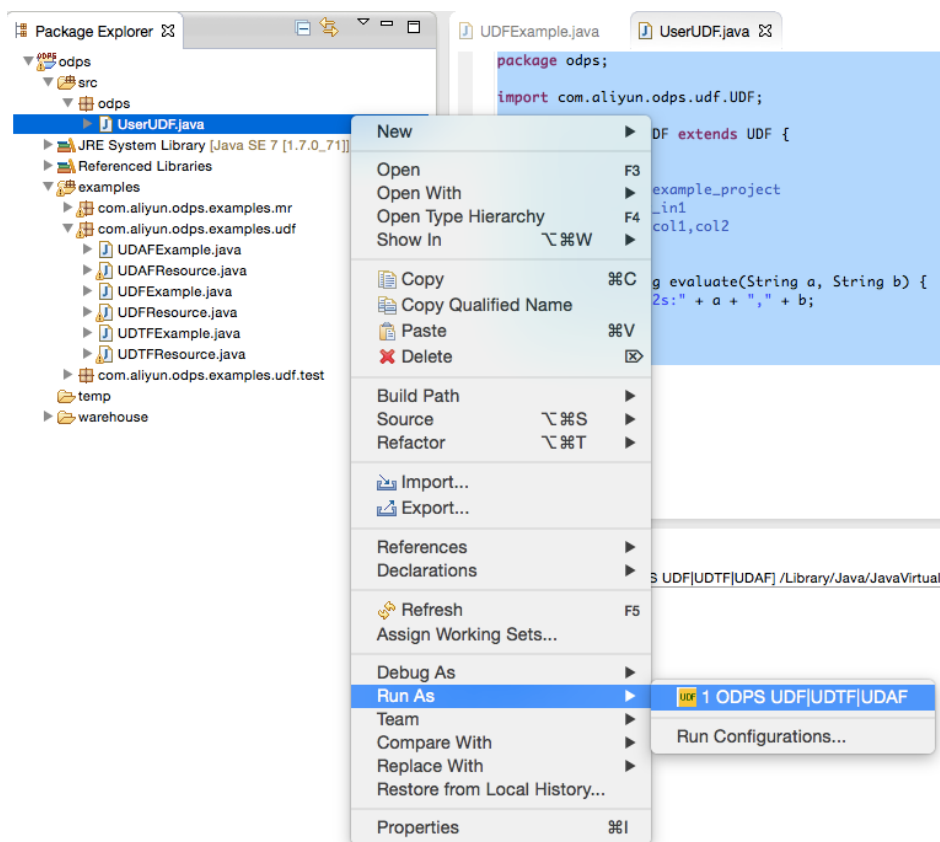
Enter the UDF class name and click "Finish" . Generate a Java file in corresponding 'src' directory with the same name as this UDF class. Edit this java file:

```
package odps;

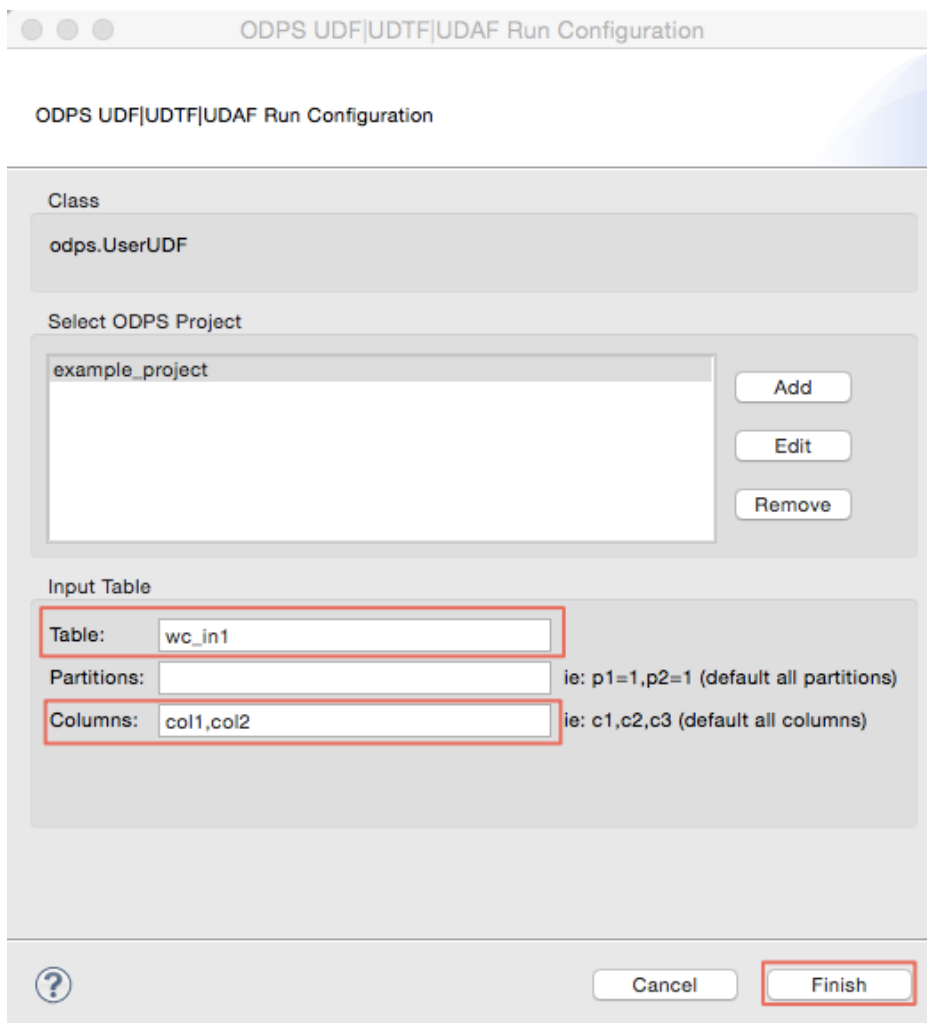
import com.aliyun.odps.udf.UDF;
```

```
public class UserUDF extends UDF {  
  
    /**  
    * project: example_project  
    * table: wc_in1  
    * columns: col1,col2  
    *  
    */  
    public String evaluate(String a, String b) {  
        return "ss2s:" + a + "," + b;  
    }  
  
}
```

Right click this java file (such as UserUDF.java) and select **Run As -> ODPS UDF|UDTF|UDAF**:



Configure the following dialog box:



The image shows a 'Run Configuration' dialog box for ODPS UDF|UDTF|UDAF. It has a title bar with three window control buttons and the text 'ODPS UDF|UDTF|UDAF Run Configuration'. The main area is divided into sections: 'Class' with a text field containing 'odps.UserUDF'; 'Select ODPS Project' with a list box containing 'example_project' and buttons 'Add', 'Edit', and 'Remove'; 'Input Table' with three rows: 'Table:' with 'wc_in1', 'Partitions:' with an empty field and hint 'ie: p1=1,p2=1 (default all partitions)', and 'Columns:' with 'col1,col2' and hint 'ie: c1,c2,c3 (default all columns)'. The bottom has a help icon, 'Cancel', and 'Finish' buttons. Red boxes highlight the 'Table' and 'Columns' fields, and the 'Finish' button.

ODPS UDF|UDTF|UDAF Run Configuration

Class

odps.UserUDF

Select ODPS Project

example_project

Add

Edit

Remove

Input Table

Table: wc_in1

Partitions: ie: p1=1,p2=1 (default all partitions)

Columns: col1,col2 ie: c1,c2,c3 (default all columns)

?

Cancel

Finish

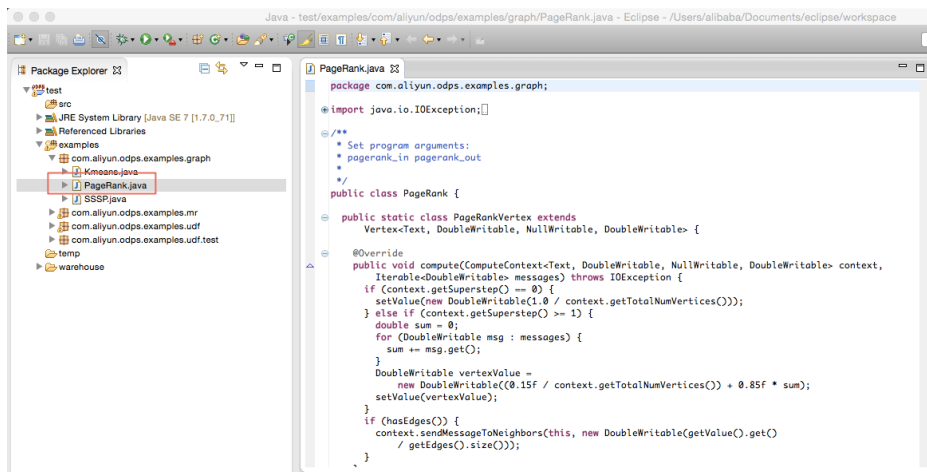
Click **finish** to get the result:

```
ss2s:A1,A2
ss2s:A1,A2
ss2s:A1,A2
ss2s:A1,A2
```

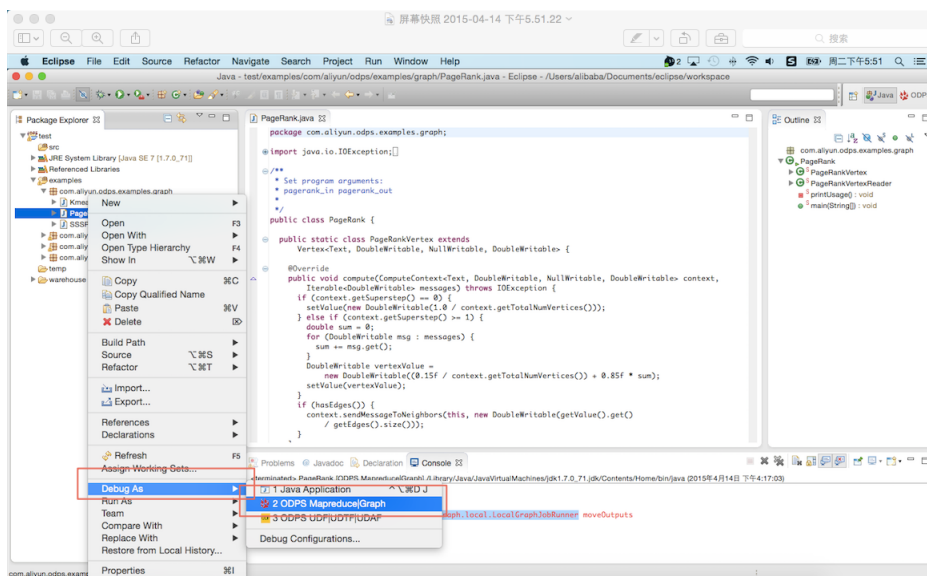
Only the operation instance of UDF is described in this section, and the way of UDTF operating is quite similar with the UDF, therefore, no special descriptions about this situation.

After creating a MaxCompute project, user can write Graph program and complete the local debugging accoring the following steps.In this example, we select "PageRank.java" provided by the plug-in to complete the debugging.

Select **PageRank.java** in **examples**:



Right click the mouse and select **Debug As -> ODPS MapReduce|Graph**:



The dialog box appears and configure it as follows:

ODPS MapReduce|Graph Run Configuration

ODPS Mapreduce|Graph Run Configuration

Class

com.aliyun.odps.examples.graph.PageRank

Run Mode

☒ Local ☐ Remote

Select ODPS Project

meta_stat
example_project

Add
Edit
Remove

Resources

Program Arguments

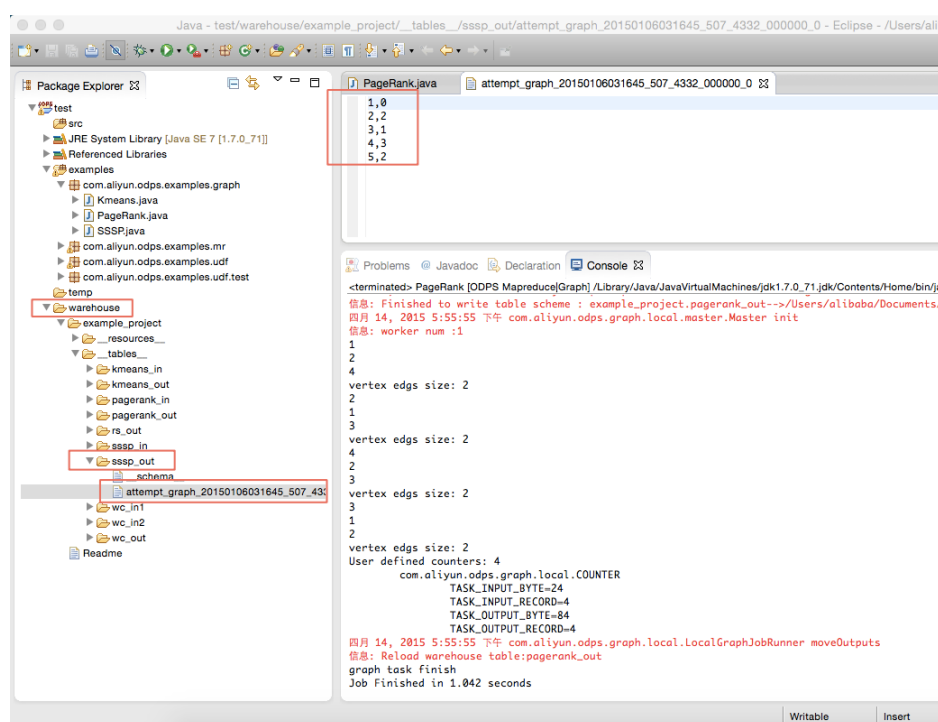
pagerank_in pagerank_out

Cancel Finish

View the running result:

```
Problems Javadoc Declaration Console
<terminated> PageRank [ODPS MapReduce|Graph] /Library/Java/JavaVirtualMachines/jdk1.7.0_71.jdk/Contents/Home/bin/java (2015年4月14日 下午5:55:53)
信息: Finished to write table scheme : example_project.pagerank_out-->/Users/alibaba/Documents/eclipse/workspace/test/temp/graph_20150414095554_448_810
四月 14, 2015 5:55:55 下午 com.aliyun.odps.graph.local.master.Master init
信息: worker num :1
1
2
4
vertex eds size: 2
2
1
3
vertex eds size: 2
4
2
3
vertex eds size: 2
3
1
2
vertex eds size: 2
User defined counters: 4
com.aliyun.odps.graph.local.COUNTER
TASK_INPUT_BYTE=24
TASK_INPUT_RECORD=4
TASK_OUTPUT_BYTE=84
TASK_OUTPUT_RECORD=4
四月 14, 2015 5:55:55 下午 com.aliyun.odps.graph.local.LocalGraphJobRunner moveOutputs
信息: Reload warehouse table: pagerank_out
graph task finish
Job Finished in 1.042 seconds
```

You can view the computing result on the local:



After the debugging passed, you can package the program and upload it to MaxCompute as a Jar resource. Then submit Graph job.

Note:

- For the package process, refer to [MapReduce Eclipse Plug-in Introduction](#).
- For the structure introduction of local result, refer to [MapReduce Eclipse Plug-in Introduction](#).
- For the detailed introduction of uploading Jar resource, refer to 'Add Resource' in [Basic Introduction](#).
- For submitting the Graph job, refer to [Graph Function](#).

- SDK Downloads: maven user can search "odps-sdk" from Maven library get MaxCompute Java SDK.
- MaxCompute console: [click here](#).
- Eclipse plugin: [click here](#).
- IntelliJ plugin: [click here](#) , Studio : [click here](#).