ODYSSEUS/EduCOSMOS
Project Management Manual

Version 1.0

Advanced Information Technology Research Center (AITrc)
KAIST

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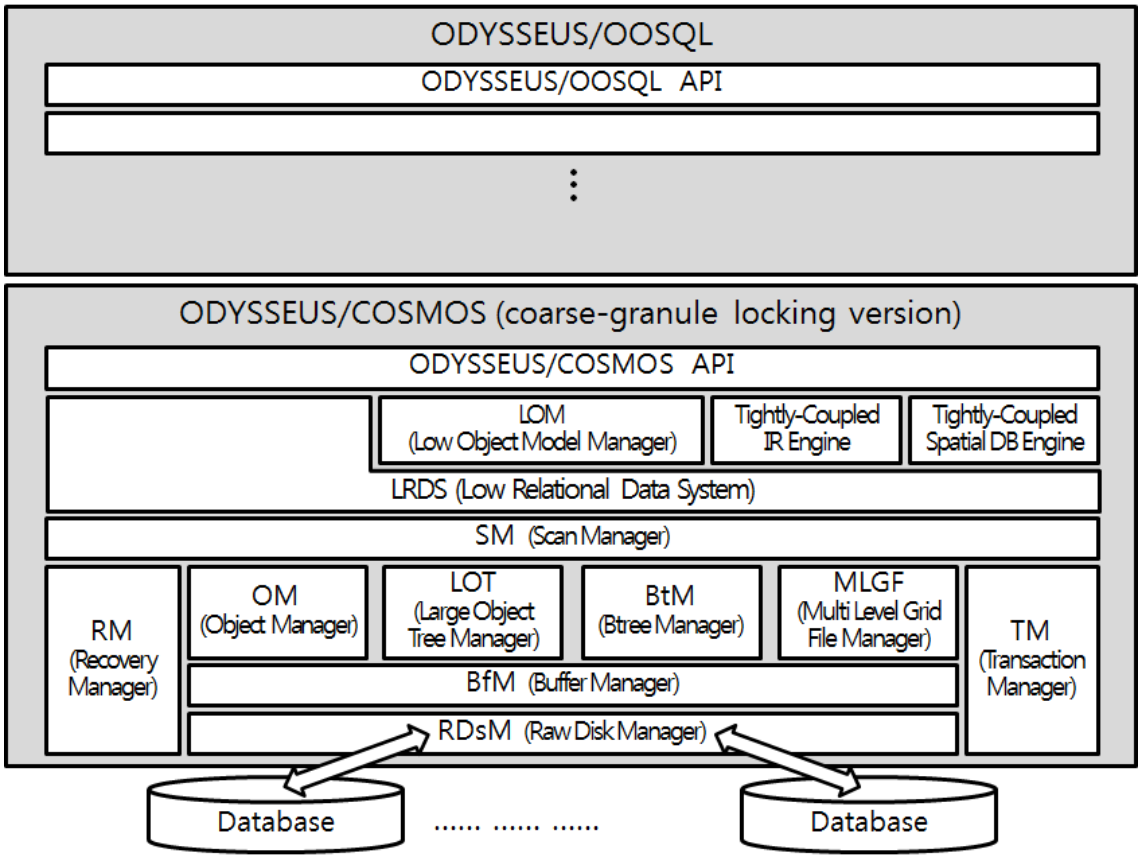
1. ODYSSEUS/EduCOSMOS Project

ODYSSEUS is an object-relational DBMS developed by Kyu-Young Whang et al. at Advanced Information Technology Research Center (AITrc) / Computer Science Department of KAIST. ODYSSEUS has been being developed since 1990. ODYSSEUS/COSMOS is the storage system of ODYSSEUS. The overall architecture of ODYSSEUS is as follows :



ODYSSEUS/EduCOSMOS is a project for educational purposes to implement a part of the ODYSSEUS/COSMOS storage system. It consists of the following three projects :

- EduBfM project : We implement the operations of the buffer manager consisting of only a very limited subset of the Odysseus Buffer Manager (BfM) functionality.

- EduOM project : We implement the operations of page-related structures consisting of only a very limited subset of the Odysseus Object Manager (OM) functionality.
- EduBtM project : We implement the operations of the B+tree index manager consisting of only a very limited subset of the Odysseus B+tree Manager (BtM) functionality.

To help implement each module, students are provided with the project manual ("EduXXX Project Manual.ppt" files), which contains the base information of the project, the procedure to follow, and the header/object files containing data structures and useful APIs. Students are also provided with the test module to test the functions that they implement and the executable solution file showing the correct test result.

Students can learn about the structures and functionality of major modules of a DBMS through each project manual provided and can learn the DBMS system programming skill by implementing and testing these modules.

2. Compilation and Execution

ODYSSEUS/EduCOSMOS is to be compiled and run on the Red Hat Linux OS. The recommended environment is as follows.

- Platform:
  - 32bit: Linux version 2.6.18-308.el5PAE
  - 64bit: Linux version 2.6.32-431.el6.x86_64
- Compiler:
  - 32bit: gcc version 4.1.2
  - 64bit: gcc version 4.4.7
- Optional software (for ease of performing the project):
  - Debugging tool (gdb)
  - Version control software (e.g., git)

3. Directory Structure of Project Management

<table>
<tr><th colspan="3">Directory/File</th><th>Description</th></tr>
<tr><td rowspan="3">Tools</td><td colspan="2">initProject.sh</td><td>Shell script file to generate the student accounts and their submission directories using student numbers listed in studentNumberList.txt</td></tr>
<tr><td colspan="2">finalProject.sh</td><td>Shell script file to delete the student accounts and their submission directories using student numbers listed in studentNumberList.txt</td></tr>
<tr><td colspan="2">studentNumberList.txt</td><td>Text file where student numbers are written with one student number in one line.</td></tr>
<tr><td rowspan="6">Submit</td><td rowspan="3">EduBfM</td><td>Account name 1</td><td rowspan="3">Directory where the result of the EduBfM project for each student account is submitted.</td></tr>
<tr><td>Account name 2</td></tr>
<tr><td>…</td></tr>
<tr><td rowspan="3">EduOM</td><td>Account name 1</td><td rowspan="3">Directory where the result of the EduOM project for each student account is submitted.</td></tr>
<tr><td>Account name 2</td></tr>
<tr><td>…</td></tr>
</table>

	EduBtM	Account name 1	Directory where the result of the EduBtM project for each student account is submitted.
		Account name 2	
		…	
Projects	EduBfM		Directory containing project files (skeleton files(.c files), object files(.o files), header files(.h files), source code files of the test module, and executable solution file)
	EduOM		
	EduBtM		
Doc	ProjectManagementManuals		Manual containing the instructions for TA to manage the project
	Project Manuals		Manual containing the base information of the project and the procedures to follow.
QnA	EduCOSMOS_QnA.txt		Collection of QnA's

4. Scenario of Project Management

4.1. Teaching Assistant (TA)

4.1.1. Preparation before the semester starts

① Construct the project environments based on the recommendation in this document.

② Copy the project management directory to the TA account after creating the account.

③ Set up access authorization for the directories and files.

(※ To prevent the students from doing actions other than submission and copying of the project files, run the following commands sequentially)

- No one except the TA account can access the project management directory.

```
cmd) chmod -R go-rwx $(project management directory)
```

- Grant the read permission for project files and the execute permission for project directories so that students can copy the project files.

```
cmd) chmod -R go+r $(project management directory)/Projects
chmod go+x $(project management directory)
```



```
chmod go+x $(project management directory)/Projects
chmod go+x $(project management directory)/Projects/*
chmod go+x $(project management directory)/Projects/*/Header
```

- Grant the execute permission for Submit directory and all its subdirectories so that students can submit the project result.

```
cmd) chmod -R go+x $(project management directory)/Submit
```

④ Create the student accounts.

- List the student numbers in studentNumberList.txt with one number in one line.
- Create the student accounts and the their submission directories by executing initProject.sh

```
Run the following command at $(project management directory)/Tools
cmd) ./initProject.sh studentNumberList.txt
```

Execution results:

- An account will be created for each student number written in studentNumber.txt.

  ID: “s<student number>”

  Password: “1234” (default password, can be changed later)

- A submission directory will be created with the name identical to the ID of each student account created as a subdirectory of the Submit directory.

4.1.2. During performing each project

① Monitor memory and CPU resources frequently by using the commands such as “top”. If they are excessively used by some students, take appropriate action to ease the situation.

4.1.3. After performing each project

① If the due date is over, prohibit submission of the project result by changing the directory permission.

```
cmd) chmod go-x $(project management directory)/Submit/EduXXX
```


4.1.4. Arrangement after the semester ends

① If necessary, back up the directories and files of all the accounts.

② Delete the student accounts and their submission directories by executing finalProject.sh.

> Run the following command at $(project management directory)/Tools
>
> cmd) ./finalProject.sh studentNumberList.txt

4.2. Student

4.2.1. Preparation before the semester starts

① Change the password of one's own account given by the TA.

4.2.2. Before performing each project

① Copy the project files in the TA account to one's own local directory.

> cmd) cp –r $(project management directory)/Projects/EduXXX $(own local directory)

4.2.3. During performing each project

① Read the project manual carefully to perform the project.

4.2.4. After performing each project

① Submit the project result files by copying them to one's own submission directory.

> cmd) cp -r $(own local directory)/EduXXX/* $(project management directory)/Submit/EduXXX/s(student number)