CALIFORNIA STATE UNIVERSITY, SACRAMENTO
College of Business Administration

MIS 114 - Database Management Systems for Business

Homework 2 - SQL and Developer Reports

Points: 30   Due Date: Monday, November 7

The objectives of this homework assignment are to demonstrate the utility of SQL, and to familiarize you with Oracle's Report Builder in Developer, a fourth generation language (4GL). It involves developing a basic tabular report generated by a single SQL command. Be sure to view the Camtasia video before working on the assignment.

Note. The videos, video_categories and distributors tables have been exported to H2.DMP and may be used at your convenience. If you *import* these tables, be sure to drop their corresponding tables created for the first homework assignment from your database. Follow the Camtasia video for importing a dump file.

Creating a Report

Create a report in Oracle Report Builder from a query that incorporates an equi-join <u>or</u> subquery using the videos and <u>either</u> the video_categories <u>or</u> distributors tables. The SQL command that drives the query should include a (descriptive) host variable (also known in Oracle as a *bind variable*) in its (WHERE) condition along with the UPPER or LOWER functions, and not produce more than two pages of output. The host variable will add flexibility to the report since the user will determine the host variable's value at runtime.

Note. The case (i.e., upper, lower, mixed) of the user's entry should NOT be a factor in producing the report's output. The user should be able to enter a name, title, keywords, etc. without having to be concerned with the case. Do NOT rely on the user entering a code (i.e., distributor_code, category_code). Use the catenation function and wildcards to accommodate a partial input (see the example on the last page).

The recommended steps for developing your report are:

- Plan the report. Review the data contained in the three tables and design a report around <u>information</u> you can extract from them (tables). Include at least (i.e., a minimum of) 4 columns, two of which can be concatenated and the other a calculation[1]. Sketch the appearance of the report on paper. This will provide you with a *target* for the assignment.

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[1]The calculation may be either an arithmetic operation between two or more numeric columns, or a calculation involving the current date and a date (data type) column.

- Create the query without the host variable(s) in SQL Plus[2]. Test the query and be sure it returns the output it is supposed to. Incorporate the following requirements into the design your query:

    ✓ An equi-join between the videos and <u>either</u> the video_categories <u>or</u> distributors tables, or a subquery involving two of the three tables.

    ✓ The condition can include a relational operator (=, < >, >, =>, <, <=) or a pattern match (LIKE) with wild cards and the UPPER/LOWER function. (See examples on last page.)

        Note. LIKE is used with <u>character</u> data types. Although it will work with numeric data types, it is not appropriate and considered incorrect usage.

    ✓ Concatenate at least (i.e., a minimum of) two columns (i.e., codes and titles/names) and assign the concatenation an alias.

        For example: "Robots (Oct 17, 2005)" is the combined title, open parenthesis, masked date released and close parenthesis.

    ✓ Create a calculation using either 2 or more columns from the videos table, or the current date and a date data type column.

    ✓ The results of your query should contain **useful information** (i.e., a report composed of columns that makes logical and obvious sense). A nonsensical assembly of columns that must be deciphered by the reader is <u>not</u> considered useful.

    After settling on a query, copy the SQL command into the Windows clipboard. It will later be pasted into the report's data model.

    Note. You will have to insert literals where the host variable(s) will later appear.

In Oracle Reports...

- Create the data model in Report Builder. Build the query in the data model view using the SQL query tool in the tool palette. Paste[3] the SQL command (from the above step) into the SQL Statement edit box.

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[2]Be creative! Do not closely mimic the queries used in the Camtasisa video or the class notes.

[3]Use <Ctrl><C> to copy the query into the Windows clipboard and <Ctrl> <V> to paste it.

- Create the report layout model. Select the tabular report layout style, and columns through the Report Wizard.

- Run the report with the default layout. See if the report presents the information you intended on displaying. If it does not, alter the data model (i.e. query) and run the report.

  Note. Whenever the data model is altered, Report Builder produces a new default report layout that writes over the previous one. Thus, do not proceed to the step of designing the report until you are satisfied with the report's information content.

- Replace the literal(s) in the command with a host variable(s) (bind variable) that will receive its (their) value(s) at runtime. Report Builder will automatically create the host variable(s) when you build the data model.

- Run the report in Live Preview. ***Does the report produce the information you intended?*** If not, adjust the query.

- Design the report (i.e., layout model). Use the various tools to rearrange and enhance the basic report. Refer to the Report Requirements section for guidelines and specifications for setting up your report.

  Note. Do not use any of the templates for your final report design.

- Run the report in Runtime Preview.

- Save your report (the one you designed, <u>not</u> the output) to an RDF file.

Report Requirements

The report you assemble is of your doing. When designing your report, be sure it conveys usable information. Reports comprised of a nonsensical assembly of columns and/or rows will not awarded full points. For example, a report that only lists prices or retrieves no rows is not useful information. Please apply your *common sense!* This is part of your grade.

Note. If you are uncertain, ask someone else if he/she can make sense of the output, just as you would with an end-user.

Design your report around the following specifications:

- The query should be created with an equi-join or a subquery.

- Use the UPPER/LOWER functions in conjunction with the wildcards (i.e., %) for your host variable (refer to homework 1).

- At least one host variable that focuses the report on a selected group of rows (entities). If you feel confident in your understanding of host variables, you may incorporate others into the query.

- Typically more than a line of information (i.e., output).

- Include at least 4 (table) columns in the body of your report (the concatenation counts for however many columns that comprise it and the calculation for one).

- A report heading with a descriptive and accurate title of your report.

- Appropriate and descriptive column headings.

- Aesthetically arrange the output (designed for an 80-column hardcopy) (i.e., center report title, <u>even</u> right and left margins, etc.). Use the ruler to help you place your fields. Follow the ruler in Reports, not the actually printout.

- Spacing between the detail lines approximating 1-1/2 to 2 lines.

- One- to two-inch top margin and 1-inch side margins. Follow the ruler in Reports, and not the actual printout.

- A 10-12 point font. Do not use the default font (Courier). A proportionate font, such as Arial or Times New Roman, will allow more characters in the column.

- Masked fields for all numeric fields and date columns. Do not use the default date mask. Be sure the column widths can accommodate the largest typical number or date. If you see a series of # in our output (e.g., ######), it means the column width is too narrow. Refer to the section beginning on page 67 of the "Oracle SQL Reference" document.

- Align the columns. In the body of the report, numeric columns should be right align while text left aligned.

- Do NOT use any of the templates for your final report design. *Be creative!*

Time, date and page number on the report are optional.

Note. Because the design of the report is of your own doing, it would be uncanny for two assignments to contain identical or near identical reports.

Warning! Following the Camtasia videos and the examples used in the class notes too closely will be a detriment to your grade. *Be creative!*

Tangibles

Submit the following items in a 9 x 12-inch manilla envelope:

- A 3-1/2 inch diskette or flash memory (i.e., memory stick) with your Report Builder (RDF) file. Be sure your report can be run from the a: drive or flash memory. When in doubt, *test it!* If it cannot be run, no credit will be awarded. Load only your assignment file on the diskette or flash memory.

- Two printouts of your report reflecting different inputted values assigned to your host variable.

- Please remember to write your name on all your material and the face of the envelope.

As stated in the syllabus, assignments are due at the beginning of class. No late assignments will be accepted.

Warning! Be sure to check your diskette or flash memory for viruses. Any medium with a virus will not be graded.

Examples

The following conditions using a host variable can be attached to your query:

```
              WHERE category_code = :Enter_category_code
```

where: `:Enter_category_code`   Host variable preceded by a colon (:)


```
        WHERE lower(video_title) LIKE lower('%'||:keyword||'%')
```

where: `:keyword`   Host variable preceded by a colon (:)

          `||`   Concatenation function

          `%`   SQL wildcard

Note. All host variables are preceded by a colon (:).