**INFOSYS330 2017 –**

**Assignment 1 Part II**

Marked out of 25 (15% of final grade)

**Due by 23:59pm on Wednesday 19th September 2018 (Week 8)**

# Submission details

# Submission details to be advised after trying and then checking the student submission process on Turn-it-in via Canvas. If there are problems with submission method alternate submission details will be advised.

**Required files to be submitted to Turn-it-in:**

## Documentation write-up file

This file contains your documentation for each task. Use the template provided on Canvas.

Feel free to change the theme/style/format of the document, but don’t change the headings

## SSIS project

Include *all* the files of your SSIS project. The marker must be able to open your project and inspect your ETL objects.

Leave all tables and data intact in your **upi\_A database**. The marker must be able to browse your cube.

3. **SSAS project**

Include *all* the files of your SSAS project. The marker must be able to open your project and browse your cube.

Leave your cube(s) deployed on the server.

**Please Note: Any other files will not be marked.**

# Please Note:

* Style and formatting, quality of content, and overall professionalism of your documentation write-up are important. Treat it as a formal document. You may lose marks for spelling mistakes, grammatical errors, poor formatting and layout, or otherwise unprofessional work.
* Do not compromise the server or anyone else’s work in any way.
* Please report all server-related technical issues to the [staff via e-mail.](mailto:s.bayati@auckland.ac.nz?subject=INFOSYS%20330:%20DW%20Assignment)
* Direct all other queries to the appropriate section of the discussion forums.
* Should there be any need for clarifications, amendments, or corrections, they will be communicated through announcements and/or forum posts.

# Introduction and scenario

(Adapted from [http://msdn.microsoft.com/en-us/library/ms124825(v=sql.100).aspx)](http://msdn.microsoft.com/en-us/library/ms124825(v%3Dsql.100).aspx))

For Your information: The SQL Server 2014 sample database is used for this exercise.

Adventure Works Cycles (AWC), a fictitious company, is a large multinational manufacturing company. The company manufactures and sells metal and composite bicycles to North American, European and Asian commercial markets. While its base operation is located in Bothell, Washington with two-hundred-and-ninety employees, several regional sales teams are located throughout their market base.

Recently, Adventure Works Cycles bought a small manufacturing plant, Importadores Neptuno, located in Mexico. Importadores Neptuno manufactures several critical subcomponents for the Adventure Works Cycles product line. These subcomponents are shipped to the Bothell location for final product assembly. Importadores Neptunois is the sole manufacturer and distributor of the touring bicycle product group.

Coming off a successful fiscal year, Adventure Works Cycles is looking to broaden its market share by:

1. targeting their sales promotions to their best customers,
2. extending their product availability through an external Web site, and
3. reducing their cost of sales through lower production costs.

You are part of a team responsible for designing and implementing a Data Warehouse (DW) to aid AWC in their three-fold goal above. The final DW will aid decision making and answer questions which Adventure Works Cycle’s OLTP cannot efficiently answer.

Designing and implementing a fully-fledged and enterprise-wide-integrated DW is not a trivial matter. It has been estimated to take twenty months before the first iteration of the DW is available for AWC’s use.

There are three major business/subject areas that need to be captured and supported by the DW – based on the three aspects of AWC’s goal. Each area has differing requirements. Your task is to design and implement one of these areas. Details are outlined in the Tasks section below.

# Tasks

## Task 1. Scope selection/definition

Select one of the following stakeholders/subject-areas for which you will design your DW:

1. **Stakeholder:** Product team

**Goal in using the DW:** Increase market share by extending product availability.

## How the DW should aid decision making:

* + Which products are the most profitable and should be made widely available?
  + Which products are the least profitable?
  + What are the most/least popular products? How do these correlate to revenue/cost?

## Task 2. DW Design (schema/ERD) [5 marks]

You will need to use AWC’s OLTP database as the primary source of data. The database is named AdventureWorks2008R2 on the isomdatabase\infosys330 server. An ERD of the database is available on Canvas. Note that the data and ERD are given directly as provided by AWC (actually Microsoft). You will have to cope with any errors that exist therein.

Design a DW schema to satisfy the selected-stakeholder’s requirements. Use a modelling tool to document your schema (as an ERD), showing Fact and Dimension tables.

Please Note: Only submit your final design – i.e. an ERD that is consistent with the tables/cubes used in tasks below.

Documentation (what to add in your documentation write-up)

* + At a minimum you will need to include your ERD.
  + You may also describe/explain your facts and dimensions in detail if you wish.

## Task 3. ETL (SSIS) [10 marks (marked out of 5 and double-weighted)]

Create all the DW tables in your upi\_A database.

Create any intermediate/staging tables needed. Do not delete these even after you have completed this task.

Create an SSIS project to perform the ETL to extract data from AWC’s OLTP (AdventureWorks2008R2) to your DW tables.

Documentation

* + Describe what transformations were performed – use screenshots/diagrams if it helps. If there are too many then show the most complex or necessary ones.
  + Coherent screenshot(s) of a successfully completed ETL run.
  + (Don’t forget to submit your SSIS project online.)

## Task 4. Cubes (SSAS) [5 marks]

Use the DW tables in your upi\_A as a source for your DW.

Create an SSAS project to create cubes. Create one cube for each fact table.

Name your project with this format: UPI\_330\_ASST1

Where applicable, add helpful hierarchies to your dimensions.

Documentation

* + Screenshot(s) of each cube’s structure. Take a screenshot of the Data Source View (and Dimensions if you need to show hierarchies)
    - You can create a separate data source view for each cube, or
    - Hide unrelated tables when taking each screenshot
  + (Don’t forget to submit your SSAS project online.)

## Task 5. DW Usage (browsing cubes) [5 marks]

Give three examples of usage scenarios, i.e. show how the end-users/stakeholders could use the facts and dimensions of your cube(s) to answer questions.

Documentation for each usage scenario

* + Description of the usage scenario (what is the user trying to do?)
  + Coherent screenshot(s) of how the cube is used to aid the user. Take a screenshot of the cube in Browser view.

# Marking guide

Each marked task is given a mark between 0 and 5. The marks roughly translate to:

|  |  |
| --- | --- |
| 0 marks | The task is not attempted, or the documentation does not make coherent sense, or, the documentation contains errors and/or reveals the DW (if designed/implemented as proposed) would not work. |
| 1 or 2 marks | The task is attempted but the documentation does not show understanding of DW design/implementation.  E.g. the documentation is inconsistent with the other tasks; the documented answer would not lead to a functioning DW. |
| 3 or 4 marks | The task is completed. The answer shows some understanding of DW design/implementation.  E.g. the documentation is mostly consistent with other tasks; a DW could be implemented though it needs to be improved to be useful. |
| 5 marks | The task is completed well. The answer documents a clear contribution to the DW design/implementation and how it will support the stakeholders/end-users. |