

**COMP501 – Computing Technology in Society**

Semester 1, 2023

Assignment 2: Computing Technology in Society –

Workflow Modelling

**Total Marks 100 (Contribution to the final mark: 20%)**

**Due: 23:59 pm, Friday, AUT calendar week 9 (12 May 2022).**

Late penalty: Late submissions will be penalised at 5% of the actual assignment mark for every calendar day. E.g. assignments submitted 5 minutes late are penalised as one day late. Late work of 5 or more days will not be marked.

**ASSIGNMENT AIM**

The assignment builds on your submitted lab exercise, which is a precursor to this assignment:

1. It aims to have students demonstrate an awareness of enterprise information systems, their application in the business environment, and modelling techniques for systems requirements.
2. It prepares students with the ability to analyse business cases and document the purpose, objectives, data requirements, data flows, input documents and output documents of common business functions and processes expressed in a range of information systems.

**Instruction for Assignment Submission**

The assignment must be submitted on CANVAS in soft copy.

File to be submitted:

The submitted file is based on the supplied Microsoft Word assignment document, containing the questions and instructions. You can type in your answers, you can also use a drawing program to draw the Data Flow Diagrams and paste them into the assignment sheet and submit. *Visio* or *Visual-paradigm* with the *Gane-Sarson* modelling templates are options you could use.

***Note:*** *Here is the link for an online tool that may be helpful for students:*

<https://online.visual-paradigm.com/app/diagrams/#diagram:proj=0&type=GaneSarsonDiagram&gallery=/repository/e7b01321-e296-4e5b-9f58-1c4a499ed65e.xml&name=Gane%20Sarson%20Diagram>

In the labs, we should mention that the symbols in Visio or the symbols in the online tool are accepted (which are less explicit about naming and duplicates than those used in Alan’s Workbook). Neatly hand-drawn diagrams with legible text will also be acceptable.

1. The *Process Modelling Workbook[[1]](#footnote-1)* (see below) will be used as a resource for this assignment.
2. I prefer that you convert the assignment into pdf before you submit it, name it as “**LAST NAME\_Student ID.pdf**. Submit it on AUTOnline at:

**Assignments - Assignment 2: Workflow Modelling**

**Miscellaneous requirements:**

* The assignment will not be marked if:
  + It contains any form of malware (e.g. computer virus)
  + Not submitted in correct file format (see section: INSTRUCTION FOR SUBMISSION)
* Keep a backup copy of your assignments to be:
  + uploaded to *“Turnitin”* anti-plagiarism service – if requested.
  + submitted as a hard copy – if requested.

**Assignment (100 marks):**

STUDENT ID: ……………………...

Complete the following exercises from the *Process Modelling Workbook*[[2]](#footnote-2)available from Blackboard under *Assignment Two: Workflow Modelling with DFDs* section. These exercises aim to further develop your familiarity with the concepts and terms of workflow modelling using data flow diagrams for this assignment.

### Data Flow Diagram Exercises

For the exercise below:

1. Produce a System outline (refer to page 2) (20 Marks)
2. Produce a Context Diagram. (30 Marks)
3. Produce a Top Level Dataflow Diagram. (50 Marks)

#### 6.2.5 Rodney Gas Billing System

Rodney has just begun to provide gas to a limited number of customers. It is expected that the number of customers will increase as further gas pipes are installed. Currently the billing is done manually, but it is planned to computerise the system in anticipation of increased volumes of users. You have been requested to investigate the system and prepare a system proposal.

This is what you have found out from your information gathering;

The meter reader visits the gas customers every six weeks in order to read their gas meter. When all readings have been logged for the period, the meter reader brings the log into head office where the accounts clerk copies the readings into a “Customer Gas Meter Readings” file which contains, for each customer, details of their previous readings.

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To produce the bills for the customers, the accounts clerk subtracts the customer’s previous meter reading from their current reading, in order to find the total vol- ume of gas used for the period. This is multiplied by the gas charge rate which the clerk finds in a “Gas Charge Rates” file. If this is the first bill for the customer, a charge for installation may be added, and sometimes there are maintenance charges. These extra charges are supplied by the Maintenance Department. The gas charge rates are set annually by management. All charge amounts are added to any previous amounts owed which are found for the customer in the “Outstanding Bills” file. The current bill is posted to the customer.

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Customers post their payments to the Rodney offices. The payments are banked and a “List of Deposits” is returned by the bank. This list is compared to the “Outstanding Bills” and paid bills are placed in the “Paid Invoices” file. Partial payments are recorded on the matching bill which remains in the “Outstanding Bills” file.

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For the Rodney Gas Billing System

1. Produce a System outline (as below refer to page 2 of Litchfield(2017)) (20 Marks)

System Outline

Out

puts

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Title | System  Gas billing system | Document | Name Rodney | Sheet |
| Input  Gas meter reading – meter reader  Customer address - customer | | | Processes  Read gas meter  Copy reading  Calculate bills  Produce bills  Send bills | |
| Files (Datastores)  Customer Gas meter reading.  Gas charges file.  Outstanding bills.  List of deposits.  Paid invoices. | | |
| Outputs  Bills – clerk  Installation charge - clerk | |
| External Entities:  Customer; Meter Reader, accountant clerk, maintenance department, management | | | | |
| Author | | | Date | |

Figure 1.1: Sample system outline. A large collection of these will be created to meet the needs of a complex system.

Nates

Anther Date

1. Produce a Context Diagram. (30 Marks)
2. Produce a Top Level Dataflow Diagram. (50 Marks)

1. Litchfield, A. (2017). *INFS500 Enterprise Systems - Bachelor of Computer and Information Science: Process Modelling Workbook*. Auckland: Auckland University of Technology. [↑](#footnote-ref-1)
2. Litchfield, A. (2017). *INFS500 Enterprise Systems - Bachelor of Computer and Information Science: Process Modelling Workbook*. Auckland: Auckland University of Technology. [↑](#footnote-ref-2)