**INSY 5341/Section 001**

**Analysis and Design**

**Fall 2022**

**Assignment 4: Program Logic Design**

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**Program Logic Design: Structure Charts**

1. **Process# 6: Manage Picnic Ordering: (closest to the process – Take and Manage Order)**

The Module of Picnic Ordering can be managed using 4 lower-level modules (level 1 processes are from the DFD) and each of those are broken down into further lower-level subordinate modules that would be equivalent to level 2 DFDs (not shown in DFD assignment). Below are the 4 modules:

1. Select Food Menu
2. Calculate Food Total
3. Select Non-Food Choice
4. Complete Picnic Ordering

Iteration: The modules 1) Retrieve booking ID, 2) Select Food Item, 3) Calculate food total, & 4) Select non-food choice are repeated and are shown with the curved arrow.

Library modules: The process uses 2 library modules, 1) to display menu options, 2) display non-food options, which are the logical modules repeated throughout the process 9 structure chart and are standardized.

Conditional lines: These are indicated as part of decision-making logic, namely, 1) Display picnic booking status, 2) Finalize food order, 3) Finalize non-food order, 4) Choose standard/fancy option and 5) Choose loaned/purchased type.

Coupling: All the modules are ‘data’ coupled since the data passed by one module to other is completely used up by the receiving modules. This indicates loose coupling.

Cohesion: All the subordinate modules are used for a single function only, hence cohesion is ‘good’ and all are functional cohesion types.

Fan-in: The fan-in for most of the modules is low to moderate, there are few modules like 6.2.1 which are reused and have high fan-in.

Fan-out: Fan-out for all the modules is low to moderate, which is desirable.

Graphical user interface

Description automatically generated with medium confidence

**Fig 1:** **Module 6:** Manage Picnic Ordering –> **Sub-Module 6.1:** Select Food Menu

Graphical user interface, diagram

Description automatically generated

**Fig 2:** **Module 6**: Manage Picnic Ordering –> **Sub-Module** **6.2:** Calculate Food Total

Diagram

Description automatically generated

**Fig 3:** **Module 6**: Manage Picnic Ordering –> **Sub-Module 6.3:** Select Non-Food Choice

Graphical user interface, diagram

Description automatically generated

**Fig 4: Module 6:** Manage Picnic Ordering –> **Sub-Module 6.4:** Complete Picnic Ordering

1. **Process# 9: Manage List of Customers: (closest to the process – Manage Customers (CRUD Operations))**

The Module of Manage customers can be managed using 3 lower-level modules and each of those are broken down into further lower-level subordinate modules that would be equivalent to level 2 DFDs. Below are the 3 modules:

1. Create Customer Record
2. Update Customer Record
3. Manage Customer Record

Iteration: The modules 1) Create, 2) Update, & 3) Manage Customer Record are repeated & shown with curved arrow.

Conditional lines: These are indicated as part of decision-making logic, namely, 1) Assess existing customer status, 2) Display update status, and 3) Assess customer loyalty status.

Coupling: All the modules are ‘data’ coupled since the data passed by one module to other is completely used up by the receiving modules. This indicates loose coupling.

Cohesion: All the subordinate modules are used for a single function only, hence cohesion is ‘good’ and all are functional cohesion types.

Fan-in: The fan-in for most of the modules is low to moderate, there are few modules like 9.2.1 which are reused and have high fan-in.

Fan-out: Fan-out for all the modules is low to moderate, which is desirable.

Graphical user interface, diagram, application

Description automatically generated

**Fig 5: Module 9:** Manage list of customers -> **Sub-Module 9.1:** Create Customer Record

Graphical user interface, diagram, application

Description automatically generated

**Fig 6: Module 9:** Manage list of customers -> **Sub-Module 9.2:** Update Customer Record

Graphical user interface, diagram, application

Description automatically generated

**Fig 7: Module 9:** Manage list of customers -> **Sub-Module 9.3:** Manage Customer Record