

IFPUG 4.1 PRACTICE CERTIFICATION EXAM

Student Question Sheet

PART 3 – CASE STUDY

The Bennett Software Group plans to develop a cargo handling system for the Venetian Port Authority (VPA). The system is known as Container Movement System (CMS), and shall be used by the Italian authorities to maintain information about goods entering and leaving the Port of Venice, Italy.

CMS is currently in design phase and requires a Function Point count, the principal analyst has had preliminary discussions with the VPA in order to determine their functional requirements. Currently, the following is known:

CMS Data Requirements

Vessel Information is required regarding every registered vessel on the seas. This information is maintained Lloyd's of London and referenced by CMS.

Vessel-Registration-Number	Flag-of-Origin
Vessel-Name	Propulsion-Indicator
Vessel-Type	Insurance-Policy-Number
Vessel-Owner	Hours-Sailed-since-last-dry-dock
Vessel-Construct-Date	Maximum-Knots-Rating

Customs Agent Information is required. This information is to be maintained by CMS.

Officer-Number.	Officer-Position
Officer-Name	Officer-Registration-Start-Date
Officer-Address	Officer-Registration-Finish-Date
Officer-Sex	Officer-Tax-File-Number
Officer-Date-of-Birth	Years-of-Experience
Officer-Phone-Number.	Number.-of-Reprimands
Officer-Rank	System-Privilege

An optional group of information may be kept for Customs Agent's with dependents. The information is required by the Port Authority to assist the relationship between employer and employee. The information is used by the Port Authority to notify them of dependents birthdays and other special occasions. The information held:

Dependents-Name	Date-of-Birth
Dependant-Address	Special-Occasions
Dependents-Sex	Special-Interests
Relationship-with-Customs-Agent	Last-Issued-Gift

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Vessel Sail Log Information is required. This information is to be maintained by CMS.

Log-Number	*Time-of-Arrival
Log-Version-Number	*Port-of-Discharge
Vessel-Registration-Number	*Discharge-Dates
Vessel-Movement-Number	*Discharge-Container-Number-from
*Port-of-Departure	*Discharge-Container-Number-to
*Date-of-Departure	*Approximate-Discharge-Weight
*Time-of-Departure	*Log-Authorised-Status
*Port-of-Arrival	*VPA-Schedule-Number.
*Date-of-Arrival	

*Note * indicates a repeating field*

VPA Schedule Information is required by the VPA to control traffic. This information is to be maintained by CMS.

VPA-Schedule-Number	Vessel-Registration-Number
Vessel-Movement-Number	Agent-Authourising
Date-of-Movement	Assigned-Tugboat-Number.
Direction-of-Movement	Tugboat-Crew-Notification-Indicator

Tugboat Information is required regarding every registered tugboat. This information is maintained by another government department and referenced by CMS.

Tugboat-Number.	Operator-Address
Tugboat-Name	Operator-E-mail-Address
Tugboat Weight	Tugboat-Master-Name
Tugboat Horsepower	Tugboat-Licence-Type

Registered Ports Reference information that lists internationally recognised Shipping Ports. This information is created by the International Port Authority and referenced by CMS.

Port-ID	Date of Inception
Port-Description	Water Depth

Report Control Maintained information that is user updated and used by each CMS report.

Printer Port-ID
Output Format

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Vessel Sail Log

Functional Requirements:

The VPA will be informed of vessel movement both entering and leaving the Port of Venice via a Vessel Sail Log.

The vessel's owners will issue the log no more than 8 working days prior to the vessel's movement. The log will contain vessel movements and is required by the VPA in order to control the bay's shipping traffic and the scheduling of an appropriate tugboat(s) to guide the vessel out of the treacherous waters of the bay. Vessel Sail Log details will be maintained, ie. Created and modified on-line by junior Customs Agents (refer to Screen CMS001) and authorised by senior Customs Agents. Following a number of collisions in the bay, the authorisation process is a Government regulation and designed to minimise bay congestion.

Junior Customs Agents creates the Vessel Sail Log by entering the following details:

Vessel Registration Number	Time-of-Arrival
Port of Departure	Port-of-Discharge
Date of Departure	Discharge-Date
Time-of-Departure	Discharge-Container-Number-from
Port-of-Arrival	Discharge-Container-Number-to
Date-of-Arrival	Approximate-Discharge-Weight

Vessel Sail Log details are validated and errors are displayed to users.

Log Number, Log Version Number and Vessel Movement Number are generated internally and displayed.

Log Authorised Status defaults to 'Draft' and is also displayed.

All detail recorded by the 'Create Vessel Sail Log Detail' screen may be modified. Log-Version-Number is incremented by .01 to indicate the number of modifications upon the details. Due to legislative requirements, once created, the Vessel Sail Log cannot be deleted.

If required, a drop down list containing internationally recognised Shipping Ports (from Registered Ports) and Vessel (from Vessel) details is available. The 'list' functionality is required for inexperienced Customs Agents who may be unfamiliar with the codes used for international ports or vessel numbers, both lists include all details held on the database (refer CMS Data Requirements for *Vessel* and *Registered Ports*).

Vessel Sail Log details may be viewed by entering the Log-Number, if an incorrect Log-Number is entered, CMS will alert users. All details contained in the record are displayed. The international port name (for Port of Departure and Port of Discharge), ie. it's description is displayed rather than it's code.

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Senior ranking Customs Agents may authorise the Vessel Sail Log details, in order to enforce this requirement, the Customs Agent's System-Privilege is checked. CMS will warn the user of the system that they do not have sufficient authority if the System-Privilege is less than rating 3. Upon authorisation, the Log-Authorised-Status is set to 'Approved' and a unique VPA-Schedule-Number is generated and written to the Vessel Sail Log (note, CMS only retrieves the Vessel Schedule Number once created by the authorisation process). A record is also created in the VPA SCHEDULE FILE.

Once approved, senior ranking Customs Agents may only modify the VESSEL SAIL LOG. Except for Log-Authorised-Status and VPA-Schedule-Number, all detail held upon the VESSEL SAIL LOG may be modified. A modification of the field Date-of-Departure, which resides on VESSEL SAIL LOG may impact the Date-of-Movement field held on VPA SCHEDULE.

Authorised VESSEL SAIL LOG details cannot be deleted.

Reporting Requirements:

Two VESSEL SAIL LOG reports are available to users:

- Vessel Sail Log Report (refer to Report CMSR001).
- Cargo Discharge Log Report (refer to Report CMSR002).

The Cargo Discharge report requires a log number to be entered in order to display all cargo discharge dates and the total discharge weight of the vessel.

The user requires the ability to control how and when assignment reports are printed. Refer to Screen CMS002 to view specific user requirements for generating the Vessel Sail Log reports. Users require the ability to view, store or modify the following aspects of report processing:

- Printer port
- Output format (either microfiche or paper copy)

CMS requires both Printer Port (1, 2 or 3) and Output format to be selected. If users attempt to store details without all appropriate details being selected, an error message will be displayed.

The report settings are stored on the Report Parameter file. Given the frequency of the Cargo Discharge Log Report, the print control details are only accessed by this report.

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VPA Schedule

Functional Requirements:

In 1997, the Port of Mugello's recreational fishermen blockaded the bay's entrance in order to draw attention to the environmental damage caused to the fish population by the amount of vessel traffic. The pressure applied by the blockade, coupled with constant harassment of radio and fishing celebrity Mr Rex Hunto caused the local government to pass laws regarding vessel traffic in the Port of Mugello. The Venetian Port Authority are responsible for vessel traffic and require the information held in VPA SCHEDULE to assist them.

All VPA Schedule details with the exception of Agent-Authorising, Assigned-Tugboat-Number and Tugboat-Crew-Notification-Indicator are created upon authorising the VESSEL SAIL LOG details, the following details are stored:

VPA-Schedule-Number	Direction-of-Movement
Vessel-Movement-Number	Vessel-Registration-Number
Date-of-Movement	

Any Customs Agent may modify Vessel-Movement-Number, Date-of-Movement and Direction-of-Movement (refer CMS003). VPA-Schedule-Number is displayed, however users do not have the ability to modify this field.

The ability to modify the above details ends when tugboat crews are notified of the anticipated vessel movement schedule. CMS validates this 'state' by analysing the contents of Assigned-Tugboat-Number field contained in VPA SCHEDULE, 'Y' indicates the tugboat crew has been informed of the anticipated movement, therefore, rendering it unable for modification.

Users may also view VPA Schedule details (refer CMS005)

The user, upon pressing the Enter or F2 key will commit the details to the VPA SCHEDULE record. VPA SCHEDULE records are required for audit purposes and cannot be deleted.

Stringent Maritime regulations exist to control the guiding of vessels into the Port of Mugello. Various documented cases exist where underpowered tugboats have attempted to guide large vessels through the Port with disastrous results.

'Power to weight ratio' formulae regulate the assignment of tugboats. Experience is required to calculate the ratio accurately, only senior Customs Agents are granted access to assign tugboats to the VPA SCHEDULE. A list of all available tugboats is available to users via a drop-down list box. The list contains all tugboat details listed in the CMS Data Requirements.

When creating or modifying the assigning of tugboats, the VPA SCHEDULE's Agent-Authorising and Assigned-Tugboat-Number are updated (refer CMS004).

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Reporting Requirements:

At the end of each day, CMS will request the required tugboat. CMS will read the VPA Schedule for records, which have been authorised, but not flagged as being sent to the tugboat operators. Records, which have an Assigned Tugboat number and the Tugboat-Crew-Notification-Indicator set to 'N' are candidates for the end of day extract. The daily extract will provide the following details and update the Tugboat-Crew-Notification-Indicator to 'Y':

VPA-Schedule-Number
Vessel-Movement-Number
Date-of-Movement
Direction-of-Movement

Vessel-Registration-Number
Agent-Authorising
Assigned-Tugboat-Number

In order to ensure all tugboats have been informed of the schedule, CMS will produce a list of outstanding tugboat requests for the anticipated vessel movement schedule (refer Report CMSR003). Users have the ability to determine the reporting period, ie Date-From and Date-To fields. This report is sent electronically to tugboat operators via the Internet.

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Customs Agent

Functional Requirements:

Users require the ability to Create, Modify, Delete (Refer Screen CMS006) with the standard error validation and Function Key ability. Users may only search by Officer-Number, if the Officer-Number does not exist, an error message is presented.

The secondary dependant screen is required when an Agent has dependants.

Assume the Customs Agent maintenance functions are independent of any other data, ie no cross referencing of other files required when capturing, modifying, deleting or viewing data.

Reporting Requirements:

Two weeks prior to a birthday of a dependant, CMS is required to notify Head Office. The notification contains the Customs Agent's Name, Dependand's Name, Dependand's Date of Birth and Last Issued Gift.

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APPENDIX A – SCREEN DIALOGUE

<< warning & error messages >>		
‘Container Movement System’		
‘Vessel Sail Log Details’		‘Date: 99/99/99’
Log Number: <nnnn>	Log Version <nn.nn>	
Log Authorised Status: <aaaaa>	VPA Schedule Number <999999/a>	
Vessel Registration Number: <aaaaaaa><^>	Vessel Movement Number: <aaa.99>	
Port of Depart. <aaaa><^>	Date of Depart. <99/99/9999>	Time of Depart. <99:99>
Port of Arrival <aaaa><^>	Date of Arrival <99/99/9999>	Time of Arrival <99:99>
CARGO DETAILS:		
Port of Discharge: <aaaa>	Approximate Discharge Weight	
Discharge Date: <99/99/9999>	<9999999999>	
Discharge Container Numbers from: <9999>	Discharge Container Numbers To:	
<9999>		
F1=Enter F6=Scroll Up F7=Scroll Down F9=Save F10=Cancel F11=View F12=Authorise		

Screen CMS001

<^> Indicates a drop down list available by pressing the down arrow

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—	CMS	▼	◊
<hr/>			
—	Vessel Sail Log Reports		
<hr/>			
<div>Printer Port</div> <div>() LPT 1</div> <div>() LPT 2</div> <div>() LPT 3</div>			
<input type="checkbox"/> Generate Microfiche Copy		OK	
<input checked="" type="checkbox"/> Generate Paper Copy		Cancel	
		Restore	

Screen CMS002

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<<	<i>warning & error messages</i>	>>
'Container Movement System' 'Modify VPA Schedule'		'Date: 99/99/99'
VPA Schedule Number: _____		
Vessel Movement Number _____		
Date of Movement	: __/__/____	Direction of Movement _____
F10=Cancel F11=View F12=Commit Modification		

Screen CMS003

<<	<i>warning & error messages</i>	>>
'Container Movement System' 'VPA Schedule Tugboat Authorisation'		'Date: 99/99/99'
VPA Schedule Number: _____	Agent Authorising	_____
Assigned Tugboat No.	: _____ <input type="button" value="v"/>	Tugboat Crew Notification Indicator : _____
F10=Cancel F11=View F12=Commit		

Screen CMS004

<v> Indicates a drop down list available by pressing the down arrow

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<<	<i>warning & error messages</i>	>>
'Container Movement System'		
'View VPA Schedule'		'Date: 99/99/99'
VPA Schedule Number: _____	Vessel Movement Number_____	
Date of Movement	: __/__/____	Direction of Movement _____
Vessel Registration Number	: _____	Agent Authorising _____
Assigned Tugboat No.	:_____	Tugboat Crew Notification Indicator : _____
F10=Cancel F11=View F12=Commit		

Screen CMS005

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‘Container Movement System’ ‘Customs Agent Maintenance’		Page Number: 99 ‘Date: 99/99/99’
Officer Number	:	
Name	:	_____
Sex:	_____	Date of Birth : __/__/____ Number of Dependents: _____
Address Line 1	:	_____
Address Line 2	:	_____
Address Line 3	:	_____
Phone Number	:	_____ Rank :_____ Position :_____
Officer Tax File Nbr	:	_____ Registration Start Date : _____/____/____
Years Experience	:	_____ Registration Finish Date: _____/____/____
Reprimands	:	_____ System Privilege :_____

Screen CMS006

‘Container Movement System’ ‘Customs Agent Dependent Maintenance’		Page Number: 99 ‘Date: 99/99/99’
Name	:	_____
Sex:	_____	Date of Birth : __/__/____ Relationship :_____
Address Line 1	:	_____
Address Line 2	:	_____
Address Line 3	:	_____
Special Occasions	Special Interests	Issued Gifts
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Screen CMS006

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<i>Quarter 1</i> 9999999	<i>Quarter 2</i> 9999999	<i>Quarter 3</i> 9999999	<i>Quarter 4</i> 9999999
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Report CMSR002

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'Container Movement System' 'CMS Tugboat Requests'				Page Number: 99 'Date: 99/99/99'
<i>Date of Movement</i>	<i>Vessel Movement Number.</i>	<i>Direction of Movement</i>	<i>Vessel Registration Number</i>	<i>Requested/assigned Tugboat Number</i>
99/99/9999	99999	aaaaaaaa	aaa999	aaa99999
99/99/9999	99999	aaaaaaaa	aaa999	aaa99999
99/99/9999	99999	aaaaaaaa	aaa999	aaa99999
99/99/9999	99999	aaaaaaaa	aaa999	aaa99999
99/99/9999	99999	aaaaaaaa	aaa999	aaa99999
99/99/9999	99999	aaaaaaaa	aaa999	aaa99999
99/99/9999	99999	aaaaaaaa	aaa999	aaa99999
99/99/9999	99999	aaaaaaaa	aaa999	aaa99999
99/99/9999	99999	aaaaaaaa	aaa999	aaa99999

Report CMSR003

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PART 3 – CASE STUDY QUESTIONS

- 1) Based upon the available information:
- List all data function types
 - List all transactional function types

Note: Assume the Value Adjustment factor to be 1.00

Answers must include;

- Function Name (transactional or data function type)
- Number of DETs
- Number of RETs or FTRs
- Type (EI, EO, EQ, ILF or EIF)
- Complexity (either, Low, Average or High)
- Score

- 2) Based upon the identified transactional function types and data function types, calculate the adjusted Development Function Points for CMS.
- 3) Supply the Development Function Point formula used to calculate the adjusted Development Function Points.

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- 4) It is now 18 months since you first counted CMS (time does fly!). CMS was successfully implemented and the world is wonderful, except for those user requests! Users have requested the following enhancements to CMS:
- Introduce a report, which lists the vessels that require 'dry dock' maintenance. The report uses hours-sailed-since-last-dry-dock, maximum-knot-rating and vessel-construction-date to determine the vessels requiring maintenance. The report extracts all details held on the Vessel file.
 - Prior to deleting Customs Agent records, the system is required to check if the Agent is associated to 'live' VPA Schedules. If the link exists (Agent-Authorising field), then the delete cannot proceed.
 - Remove the Report Control file and its associated functions

Based upon the available information:

- List all data function types
- List all transactional function types

Note: Assume the Value Adjustment factor to be 1.10

Answers must include;

- Function Name (transactional or data function type)
- Enhancement Type (Add, Change or Delete)
- Type (EI, EO, EQ, ILF or EIF)
- Complexity Before Enhancement (Low, Average or High)
- Complexity After Enhancement (Low, Average or High)
- Score Before Enhancement (deleted and changed functions)
- Score After Enhancement (added and changed functions)

- 5) Based upon the identified transactional function types and data function types, calculate the total unadjusted Function Points added by the project.
- 6) Based upon the identified transactional function types and data function types, calculate the total unadjusted Function Points Changed (Before and After) by the project.
- 7) Based upon the identified transactional function types and data function types, calculate the total unadjusted Function Points Deleted by the project.
- 8) Based upon the identified transactional function types and data function types, calculate the adjusted Enhancement Function Points for CMS.
- 9) Supply the Enhancement Function Point formula used to calculate the adjusted Enhancement Function Points.