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| **Assignment** | **:** | **APU In-course - Individual Assignment (50%)** |
| **Module** | **:** | **CT073-3-2 Computer System Low Level Techniques** |
| **Date Assigned** | **:** | **22nd May 2023** |
| **Date Due** | **:** | **10 August 2023** |

**Learning Outcome of the Assignment (CLO:3)**

Propose a working example of a program in machine level language using any appropriate assembly programming tool (A5, PLO6)

**Instructions:**

1. No marks will be awarded for the entire assignment if any part of it is found to be copied directly from online materials or from another student.
2. All submissions should be made ***online*** on or before the due date.
3. Any late submissions after the deadline will not be entertained.
4. Zero (0) mark will be awarded for late submission, unless extenuating circumstances are upheld..

**SCENARIO**

**INVENTORY SYSTEM**

Inventory management tools are crucial because they assist businesses in effectively tracking and managing their inventory, which can help them avoid having too much or too little stocks on hand.

You are required to develop a simple system to list all the inventories that are available in the organization. You may categorize the inventory based on priority or based on certain criteria such as finished goods, ordering, goods need to order and other criteria that suitable based on the organization nature that you are focusing on for the system. Your system needs to alert or highlight the goods that need to be ordered. Goods that are less than 5 items should be highlighted or prompted by the system to order from the vendor. Every sales of the item need to be auto deducted from the inventory system. You are free to design the system based on your creativity in terms of interface design and system functionality.

**What is your task?**

You, as a technical team in an organization, you are required to develop an assembly language program for the above-mentioned case study using TASM and TLINK.

## Design main menu for the system that list down the inventory of the company.

## You are expected to demonstrate creativity in developing an application using assembly language prototype that can deal with the requirements as stated in the scenario above. You may address (if necessary) any other aspects of control of the application.

## You have to work on the prototype individually.

## You are permitted to make assumptions where necessary. These assumptions are expected to be logical and must be appropriate for the situation at hand.

## There will be a presentation towards the submission date of the project. You are expected to demonstrate how your system can address the requirements to the top level management of the organization.

## The submission of your project should entail the following items:

* 1. Documentation should include the following:
     1. Research and discuss the importance of Assembly Language and where it is commonly used.
     2. Research on how the low-level language is being used in cybersecurity and forensic fields. Your research may include malware analysis and reverse engineering.
     3. System Design using flowchart.
  2. Softcopy user manual or guide that can explain how your system works. This will be based on your system application.

## Your completed documentation should meet the following requirements:

* Table of contents for every detailed section
* Introduction on Assembly Language
* Research and Analysis
* System Design using flowchart.
* System Screenshot
* Source Code
* Conclusion
* References
* Appendices if necessary

**The Assesment**

This assignment will contribute 50% towards the module marks, as mentioned in the Student Assessment & Information sheet. This assignment will be evaluated based on the following criteria. Marks will be awarded based on:

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| **Criteria** | **Weight in Pecentage** |
| **Demonstration: Presentation & Meet Criteria Requirement**  Demonstrating a sound knowledge and understanding of the scenario study in context. | 20 |
| **Report: Research, Analysis and Evaluation**  Discussion and analysis of the process that takes place based on the scenario given. | 30 |
| **Implementation: Software running without error**  This includes no runtime error, syntax errors etc. Source codes are consistent, clean, modular and follows programming logic. | 30 |
| **Report: Documentation and Referencing**  A proper documentation and references, adhering to the academic writing format as required by the university. | 20 |

**Marking Scheme (based on SLT):**

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| **Presentation & Meet Criteria Requirement**  (30%) | 0 | 1-6 | 7-13 | 14-20 |
| No presentation not followed criteria requirement | Un-clear presentation with unclear information | Good presentation with limited information | Excellent presentation and covered all the expected information by creative knowledge |
| **Research and Analysis**  **(20%)** | 0 | 1-10 | 11-20 | 21-30 |
| Not attempt or not shown any information about the research and analysis | Provided partial research and analysis with unclear standards, copied contents followed without paraphrasing. Need to improve more | Able to provide enough information about the research and analysis but need to meet its standard | Well clear and well gathered information provided related to the given case study |
| **Software running without error**  **(30%)** | 0 | 1-10 | 11-20 | 21-30 |
| Not complete and not able to generate output | Able to provide major changes in the output reasonable login. | No runtime error, syntax errors etc. Source codes are consistent, clean, modular and follows programming logic | Excellent programming logic and output. |
| **Documentation and Referencing (20%)** | 0 | 1-6 | 7-13 | 14-20 |
| Not attempt this part. | Able to provide major changes needed in the documentation also few points written under reflection | Good documentation and reflection provided but still need room to improve | Wonderful and standard documentation style followed throughout the document and provided reflection about the given case study |

**Grading Sheet**

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| Distinction | A+: 80% + | A: 75-79% |  |
| Credit | B+: 70 – 74% | B: 65 – 69% |  |
| Pass | C+: 60 – 64% | C: 55 – 59 % | C-: 50 – 54% |
| Marginal Fail | D: 40–49% | F+: 30-39% |  |
| Fail | F+: 30-39% | F: 20-29% | F-: 0-19% |

**Submission requirements**

1. Your report must be typed using word processor with Times New Roman font size 12, with 1.5 spaces.
2. The report has to be well presented and should be typed. Submission of report that is unprofessional in its outlook will not fare well when marks are allocated.
3. The report should have a one (1”) margin all around the page as illustrated below:



1. Every report must have a *front cover*. The front cover should have the following details:-
   1. Name
   2. Intake code.
   3. Subject.
   4. Project Title.
   5. Date Assigned (the date the report was handed out).
   6. Date Completed (the date the report is due to be handed in).
2. **All** information, figures and diagrams obtained from external sources **must** be referenced using the APA referencing system accordingly.
3. **Plagiarism** is a serious offence and will automatically be awarded **zero** (0) marks.
4. The submission will be through Moodle whereby a link will be provided on the day of submission.

**Assignment marking criteria:**

### Performance Criteria:

The following guidelines indicate the standard that will be expected for each grade.

### **Distinction (75% and above)**

Demonstrates an excellent understanding of the CSLLT concepts based on assembly program execution. Execution has done in step-by-step process without showing any errors. The research and analysis have been provided accordance with the importance of assembly language in cybersecurity and forensics. In depth research on malware analysis and reverse engineering clearly described the significance of low-level programming language. User manual and self-reflection have been covered in the document. The entire document followed its standard with citations and references using APA referencing style. Knowledge of creativity and designs have shown through program structure and flowchart. This student answered all questions during the presentation.

### **Credit (65 – 74%)**

Demonstrates a good understanding of the CSLLT concepts based on assembly program execution. Execution has done in step-by-step process without showing any errors, however, slightly need improvement in the programming logic. The research and analysis have been provided accordance with the importance of assembly language in cybersecurity and forensics. But expected to have few more information. Depth research on malware analysis and reverse engineering described and managed to provide the significance of low-level programming language. User manual and self-reflection have been covered in the document. The entire document followed its standard with citations and references using APA referencing style however, required to add the citations. Satisfactory knowledge of creativity and designs have shown through program structure and flowchart. This student answered all questions during the presentation.

### **Pass (50 – 64%)**

Demonstrates a moderate understanding of the CSLLT concepts based on assembly program execution. Execution has done in step-by-step process with errors, however, need more improvement in the programming logic. The research and analysis have been provided not accordance with the importance of assembly language in cybersecurity and forensics. But expected to have more information. Depth research on malware analysis and reverse engineering not described well and managed to provide the significance of low-level programming language. User manual and self-reflection have been covered in the document. But room provided to improve more. The entire document followed minimal standard with citations and references using APA referencing style. Managed to provide creativity and designs the flowchart. This student did not answer all questions during the presentation.

### **Marginal Fail (40 – 49%)**

Demonstrates a poor understanding of the CSLLT concepts based on assembly program execution. Execution has not done in step-by-step process and shown with errors, however, need more improvement in the programming logic. The research and analysis have not been provided. But expected to have more information. Depth research on malware analysis and reverse engineering not described well and not provided the significance of low-level programming language. User manual and self-reflection need to improve. The entire document not followed citations and references. Managed to provide creativity and designs also the flowchart. This student not answered all questions during the presentation or this student didn’t present.

### **Fail (0 - 39%)**

Demonstrates a very poor understanding of the CSLLT concepts based on assembly program execution. Failed to provide step-by-step process and shown with errors, however, need more improvement in the programming logic. The research and analysis are incomplete. There is no research on malware analysis and reverse engineering did not provide the significance of low-level programming language. User manual and self-reflection not covered. The entire document not followed citations and references. The creativity and designs the flowchart not found in the document. This student did not answer all questions during the presentation, or this student didn’t present.