ASSIGNMENT 2 FRONT SHEET

Qualification	**BTEC Level 5 HND Diploma in Computing**		
Unit number and title	Unit 1: Programming		
Submission date		**Date Received 1st submission**	
Re-submission Date		**Date Received 2nd submission**	
Student Name		**Student ID**	
Class		**Assessor name**	
Student declaration I certify that the assignment submission is entirely my own work and I fully understand the consequences of plagiarism. I understand that making a false declaration is a form of malpractice.			
		Student's signature	

Grading grid

P2	P3	P4	P5	M2	M3	M4	D2	D3	D4

☼ **Summative Feedback:**	☼ **Resubmission Feedback:**	
Grade:	**Assessor Signature:**	**Date:**
Lecturer Signature:		

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Introduction

As you know, information technology is a growing industry. Especially in the current era 4.0, the development of information technology associated with the development of companies. And information technology is now based on algorithms. This report will discuss the definition, characteristics, behavior of algorithms, and analysis of algorithms.

I. What is an algorithm?

1. Define

- The algorithm is a finite set of steps, the statements are arranged in a sequence to solve a problem that produces the desired result. Programming algorithms are written in many programming languages.
- From the viewpoint of data structure, there will be some basic algorithms:
  - ✓ Search algorithm: An algorithm to search for an element in a data structure.
  - ✓ Sorting algorithm: An algorithm to sort elements in a certain order.
  - ✓ Insert algorithm: The algorithm inserts a word into the data structure.
  - ✓ Delete algorithm: An algorithm to delete an existing element from the data structure.
  - ✓ Algorithm update: The algorithm updates (or updates) an existing element in the data structure.

2. Characteristics

- Not every problem solving method is considered an algorithm. An algorithm should have the following characteristics:
  - ✓ Identification: The algorithm must be clear and clear. Each stage (or step) should be clear and only have a specific purpose.
  - ✓ Defined input data: An algorithm should have 0 or more defined input data.
  - ✓ Output: An algorithm should have one or more outputs defined and should connect to the type of output you want.
  - ✓ Stability: The algorithm must end after a finite number of steps.
  - ✓ Efficient: An algorithm should be implemented with the resources available, ie can solve the problem effectively in time and resources permitted.
  - ✓ Popularity: An algorithm is common if it can solve a class of similar problems.
  - ✓ Independence: An algorithm should have the independent guide to any programming code.

3. An example of an algorithm

- Algorithms always appear around us, I will take a familiar example of the algorithm for you to understand. You know that egg coffee is a drink made from Vietnamese creativity and it is really delicious and attractive, so how to make such an egg coffee cup. Below are steps to describe the process of making an egg coffee:

Figure 1.1 How to make egg coffee

  - ✓ First : Gather all your ingredients and brew 12 ounces of strong espresso style coffee. This is enough for 2 servings.
  - ✓ 2. Add the egg yolk and sweetened condensed milk to a pitcher and whip with a hand blender.
  - ✓ 3. Continue whipping until you have soft peaks and the volume will more than double.
  - ✓ 4. Add the espresso to the 2 cups of coffee and then spoon on the whipped egg mixture over the top. Enjoy!
- So above is considered an algorithm. The result is a coffee cup eggs as desired, is performed by the finite step and clearly arranged

II. Steps to build an application

- You have an idea for an app like home search, gaming support, messaging apps, etc., but you don't know how to turn that idea into an app. It really helps you to get a lot of success, but profit from that app. There are a lot of software tools available today to help you build an application, but without a method of doing it, a clear plan, risks can occur at any time. Below I will introduce you to the basic steps so you can build an idea into an application and make a profit from it.
  - Step 1 - Analyzing requirements and ideas: First, let's slowly put the technology aside. We will think about and highlight the points to note of this idea.
    - What is the purpose of your idea to solve the problem?
    - What would it be to solve the problem?
    - The result will be like?
    - How to attract the audience that you want to target?

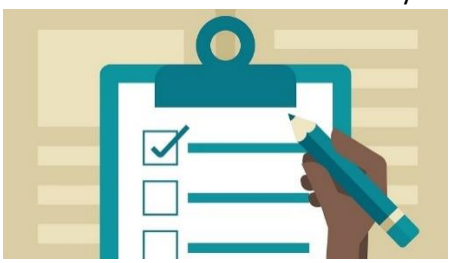

Figure 2 Target

  - ✓ Step 2 - Design software outline: A process of problem-solving and planning for a software solution. After software goals and specifications are decided, the developer will design or hire a designer to develop a plan for the software solution. It includes low-level components, algorithmic issues, and architectural views.

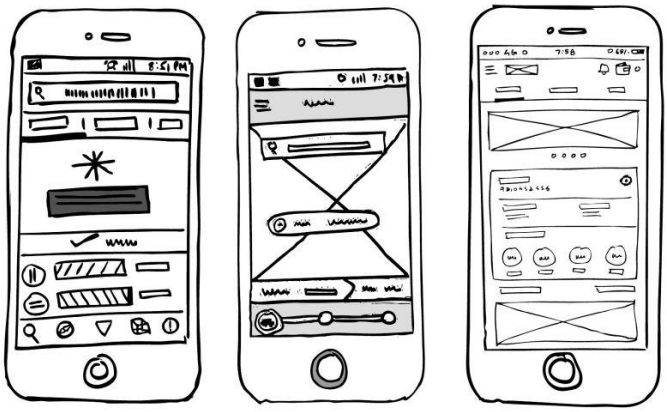

Figure 3 Design and drafting

- ✓ Step 3 - Computer programming: Computer programming (called programming) is the technique of installing one or more abstract algorithms related to each other by one or more programming languages to create a program. computer. Programming has elements of art, science, math, and engineering.
  Different programming languages support different programming styles. Part of the programming job is choosing one of the languages that best fits the problem you need to solve. Different programming languages require programmers to handle details at different levels when installing algorithms. Consistency in how to handle will facilitate the programming and efficiency of the program.
- ✓ Step 4 - Software testing: Software testing is an examination conducted to provide stakeholders with information about the quality of the product or service being tested. Testing can provide businesses with an independent point of view on software so that it can assess and understand the risks in software deployment.
  Depending on the method, testing can be done at any time during application programming. You can also release a demo to friends, family or people who can give you a quality review from the product. But errors that cause unsatisfied users will be noted for the next step

Figure 4 Demo

- ✓ Step 5 - Modify and adjust: Your application is fully functional but you still feel it needs some modification. Acquire comments and appropriate methods to deploy into your application. Issues detected during testing will be corrected. Meet yourself or your team to see if the changes are valuable for your application

Figure 5 Fix

- ✓ Step 6 - Deploying widely released applications: After the software is tested and corrected errors will be deployed and put into use in practice. Developers will consider this as a process of evaluating product performance, detecting errors that have not been found at the time of testing. Evaluate pros and cons to better prepare your application development plan.

Figure 6 Release

- ✓ Step 7 - Maintain and upgrade: This process will help to repair mistakes DC users or publishers detected in time product release or the publisher to add new features to help complete the products and attract more audiences.

III. Solve problems with algorithms

1. Problem

- Currently, large businesses such as Vietnam have Vinmart, Circle K, Big C, ... but all businesses have many items, the number of orders sold per day is very large. It will be very difficult if they do not have a good sales management software. A good sales management software will help them save 80% of the time, effort and cost, making the store management simpler but still highly effective. In this exercise I will create a plan to build a sales management software with basic features that make it easier to manage.

2. Problem solving

a. Analyze the problem

- Sales management software will be divided into two main functions: products management and sales management

- I will introduce more carefully into sales management function, product management software will be similarly designed.
  Products management function will be divided into two other small functions: order management and customer management.
  - ✓ Order management function: Allows to add, delete, or search orders, revenue summary.
  - ✓ Customer management function: Allow to edit, delete customer information, search and track customers.

b. Main menu of management software

- The functions that I designed will be described below

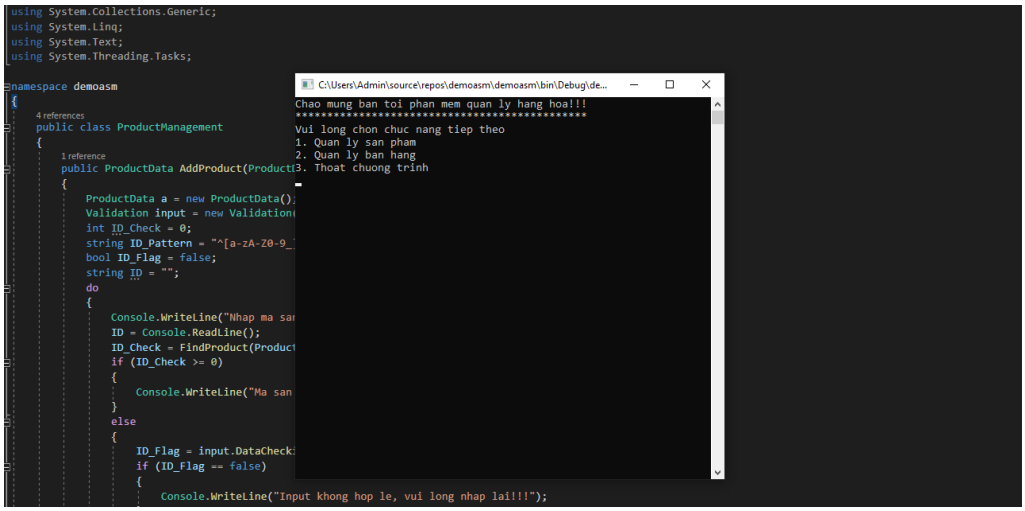

Figure 7 Main menu

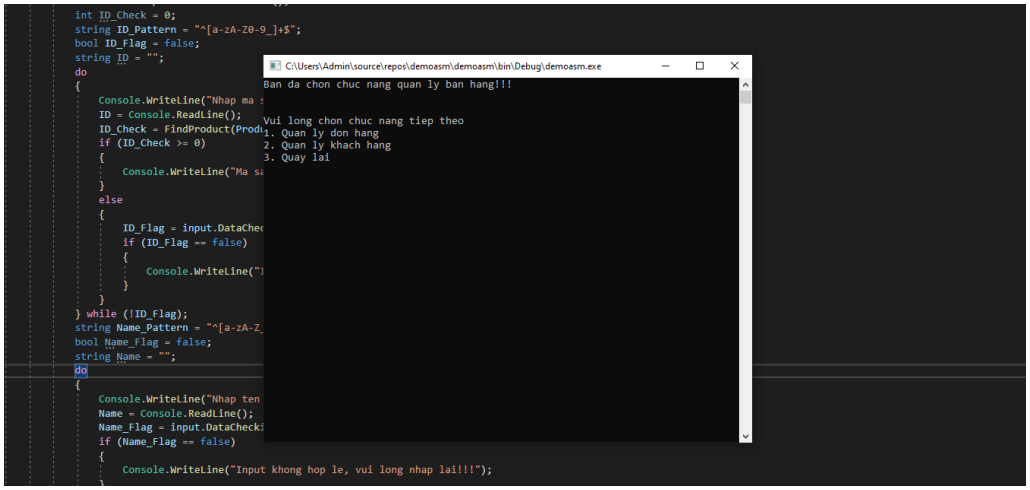

Figure 8 Main menu of sales management function

c. Functional analysis

- Main menu :
-

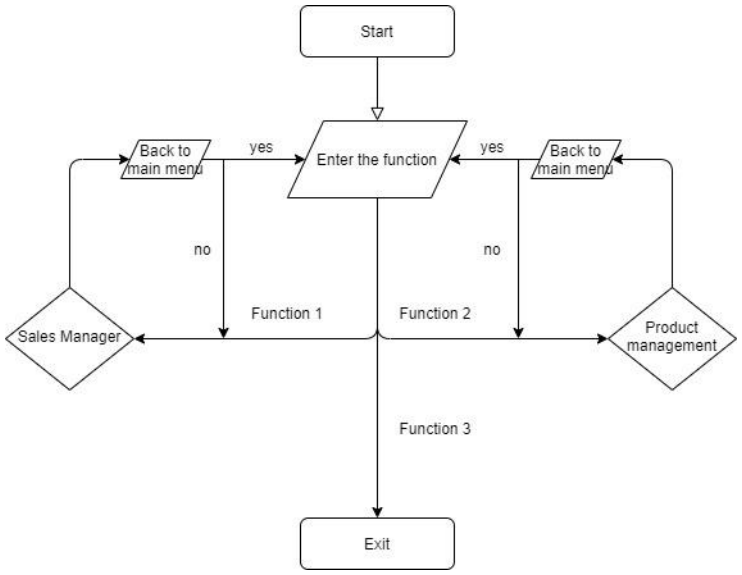

Figure 9 Flowchart Main menu

- Bill management :
- Here is the flowchart about bill management that i have built

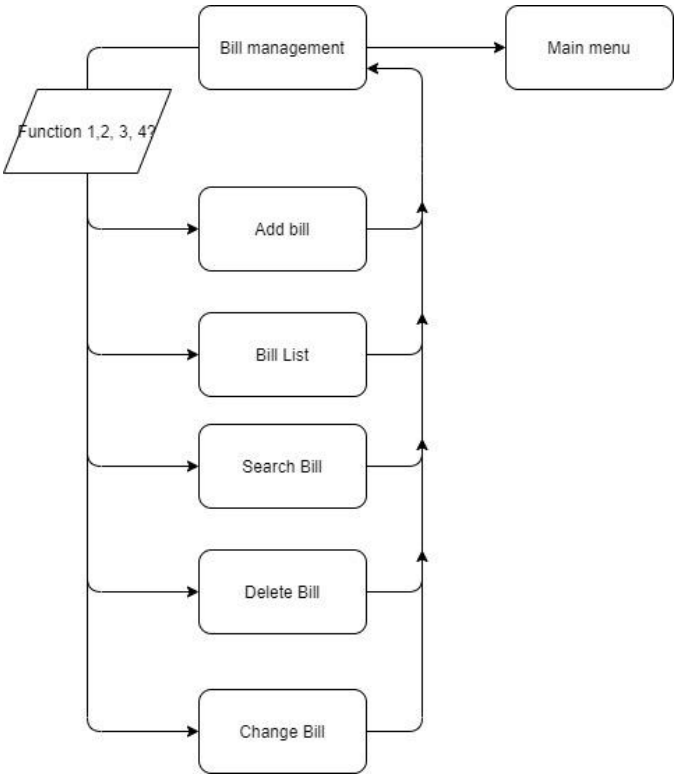

Figure 10 Flowchart Bill management

- Customer Management
- Here is the flowchart about customer management that I have built

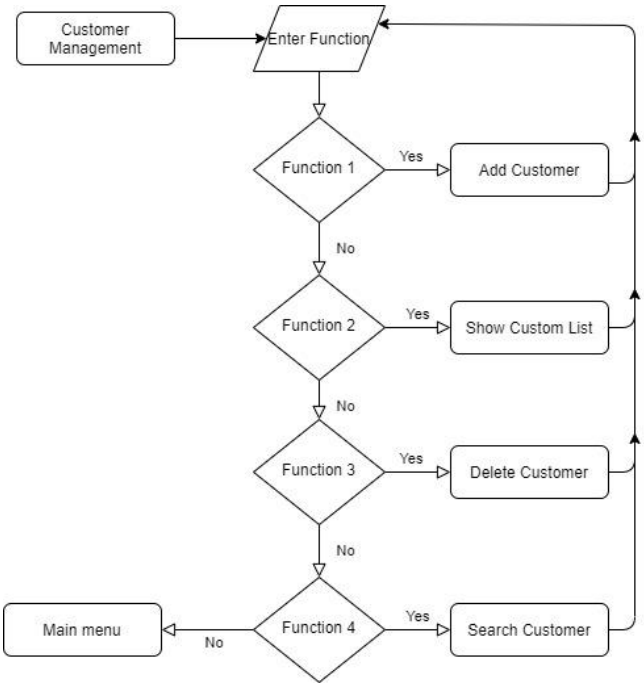

Figure 11 Customer Management

IV. Conclusion

- So I introduced you to the basics of programming, the basic concepts of algorithms, how to help you build applications effectively, saving you time and money. How to solve the problem with an algorithm. Hopefully this information can help you with a basic programming foundation, giving you a better direction in future projects.

V. Reference

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