# Task 7 – Programming Production

## Year 12 ATAR Computer Science – Hayden Woods – Ms Vettler

You have been contracted to create a program for a local patisserie – “For Goodness Cakes”. The program will need to calculate the amount due for individual cake orders. The types of cakes sold include:

* Macaroons – individual **$ 1.50**
* Macaroons – 8 pack **$ 8.00**
* Cupcake **$ 3.50**
* Slice **$ 3.25**
* Assorted Box **$12.50**

1. If cake is consumed in the shop, a surcharge of 10% is added to the total amount due. A function should be used to calculate this amount.
2. Take-away cake is charged at the above listed prices.

### Requirements Analysis

The two main requirements outlined by the client in the given statement are that:

* The program should be able to calculate the amount due for an individual cake order.
  + This requirement is the base of the whole program, it involves me having to create some sort of loop to ask for the items that the customer would like to order and match up those responses to a list of available items to grab the corresponding cost.
  + This process should be repeated until the customer responds “no” to the “another item” question.
  + All these items should be put in another list and will be summed up at the end of the order.
* The program should be able to factor in whether they are taking the order away or eating in and change the total accordingly.
  + This requirement allows the customer to choose at the end of the order if they want to sit in and eat or take their meal away.
  + This will require me to use a selection statement to check if they answer yes or no to the “dining in” question.
  + If they answer “yes”, I will have to add 10% of the price to the total.
  + If they answer “no”, I will leave the total the same.

### Following the System Development Cycle

The System Development Cycle (SDC) is the structure which is imposed on the development of a piece of software. There are five steps:

**State the Problem**

In this stage I will state the problem that is trying to be solved by the creation of the program. This will require me to analyse the design brief made by the client and pick out the key points in which they want me to build the program around. I will also break down the project into manageable pieces that can be easily worked on later when in the development stage.

**Plan and Design**

In this stage I will plan what needs to be implemented on the user end of the program and also design the interface that they will interact with. I will also plan the different data structures and algorithms that will be used in the development stage. I will need to factor in the user needs to be able to correctly meet the requirements stated during the analysis. I will be using pseudocode and flow charts to identify the flow and design of the algorithms and program as a whole.

**Develop**

In this stage I will physically develop the solution to the problem stated in the analysis. For the development of the program I will be utilising the Python 3.6 programming language and an online interpreter to run and test the program during development.

I will also be documenting during this stage so that if anyone else wants to work on the program, they will be able to see what is going on in each section. To document I will use a external document which will be a user and technical manual and internal documentation which will be in the form of comments throughout the code.

**Test**

In this stage I will be physically testing the completed solution to the problem stated in the analysis. To do this I will be using multiple techniques such as:

* Going through the source code and identifying any syntax errors that could be a problem when the program is run
* Running the program and looking for any simple logical errors that could result in the wrong value being returned. I will also go into this in more depth by setting up test values and using a trace table to track the changes in the variables over time.
* Checking if the program meets the client’s requirements by looking over the requirements stated in the analysis stage.

**Evaluate**

In this stage I will be physically evaluating the worth of the program by using a set of development requirements. There are three main requirements I will need to look over:

* Does the program meet the user’s needs?
  + This will check if the user can do anything that was requested by the client and analysed during the analysis stage.
* Is the user interface intuitive and easy to use?
  + This will check if the interface is easy to use and intuitive for the user upon first use and extended periods of use.
* Does the software perform well?
  + This will check if the software is stable and consistent in the results that it provides.