Kemnal Technology College –Computer Science Kemnal Key – Yr11 Term 2

You must be able to understand and explain the following terms; algorithm, decomposition and abstraction.

Problem Solving

Data types and structures

Programs use data, known as 'values'. Variables hold values. Each variable in a program must have a data type. Sometimes a programmer needs to store a lot of related data. To do this they use structures such as arrays.

Operators

In computer science, an operator is a character or characters that determine the action that is to be performed or considered.

There are three types of operator that programmers use:

- ✓ arithmetic operators
- ✓ relational operators
- ✓ logical operators

KEMNAL KEY QUESTIONS

1. What is a data type?
2. What are the three control programming structures in Python?
3. Define the term decomposition
4. Describe **three** advantages of decomposition
5. What will be printed by the following call to the procedure?
printInfo("Mickey", "Mouse", 92)

Translators & facilities of languages

Low level languages:

- Machine language
  - Op-code
  - Operand
- Assembly language
  - Mnemonics

High level languages:

- Source code
- Assembler
- Compiler
- Interpreter

Integrated development environment (IDE).

- Source code editor.
- Error debugger.
- Run time environment.
- Translator (compiler or interpreter).
- Automation tools

Data types

- **Integer** e.g. 23
- **Real** e.g. 23.7
- **Character** e.g. A or 5
- **String** e.g. A546TH
- **Boolean** e.g. TRUE or FALSE.

- **Sub programs**
  - Functions
  - Procedures

- **Arrays**
  - one dimensional arrays
  - two dimensional arrays

Robust programs

- defensive design considerations:
  - input sanitisation/validation
  - planning for contingencies
  - anticipating misuse
  - authentication
- maintainability:
  - Comments & Indentation

Programming techniques

- **Sequence**
- **Selection**
  - IF… ELSE…
- **Iteration**
  - For & While
- **Basic string manipulation**

Exam Question (4 marks)

How many parameters does procedure **printInfo** have?

```
def printInfo(firstname, surname, age):
    fullName = firstname + " " + surname
    years = str(age) + " years old."
    print(fullName)
    print(years)
```

It is your responsibility to make sure you regularly revisit this knowledge outside of class.