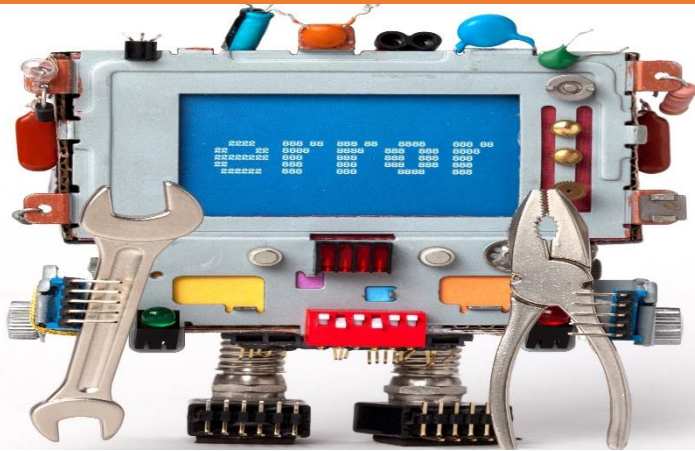


Kemnal Technology College. Computer Science Kemnal Key - Yr10 Term 6

You must be able to use decomposition and abstraction to solve problems and convert it into programs.

Problem solving with programming



- ✓ A **linear search** is the simplest method of searching a data set. Starting at the beginning of the data set, each item of data is examined until a match is made.
- ✓ **Binary search** is an efficient algorithm for finding an item from a sorted list of items. It works by repeatedly dividing in half the portion of the list that could contain the item, until you've narrowed down the possible locations to just one.
- ✓ In computer science, **merge sort** is an efficient, general-purpose, and comparison-based sorting algorithm.
- ✓ **Bubble sort**, sometimes referred to as sinking sort, is a simple sorting algorithm that repeatedly steps through the list, compares adjacent elements and swaps them if they are in the wrong order.

Exam Question (6 marks)

- ✓ Compare the use of a compiler with the use of an interpreter to translate code.

KEY - to be to use logical reasoning and test data to evaluate a program's fitness for purpose and efficiency.

KEMNAL KEY QUESTIONS

1. What is meant by syntax, logic and runtime errors. Give an example for each.
2. Explain the difference between variable and constants. Give an example for each.
3. Describe the 5 data types.
4. What are the 3 basic structures used in programming?
5. What is the purpose of a trace table?
6. How does binary and linear searches work?
7. What is the difference between a bubble and a merge sort? Which of these is the most efficient and why?

Remember:
You will learn create trace and truth tables, and use python to write programs.

Look at two linear search algorithms below

How many passes will each algorithm have?

```
fruit = ["apples", "bananas", "grapefruit", "kiwi", "melon"]
searchTerm = "grapefruit"
```

Algorithm 1:

```
for item in fruit:
    if item == searchTerm:
        print("found")
```

Algorithm 2:

```
i = 0
itemFound = False
while i < len(fruit) and not itemFound:
    if fruit[i] == searchTerm:
        print("found")
        itemFound = True
    i = i + 1
```

Comparison operators	Meaning	Python example	Result	Notes on other languages
==	Equal to	5 == 5	True	Some languages use a single
!=	Not equal to	5 != 5	False	Visual Basic uses <>
>	Greater than	5 > 5	False	
>=	Greater than or equal to	5 >= 5	True	
<	Less than	5 < 5	False	
<=	Less than or	5 <= 5	True	