

COMPUTING

2024 Subject Option Exercise



Why offer Computing?

Technology in daily world

Technology has impacted our daily lives beyond what we can measure and is still doing so.

Advantage in STEM industries

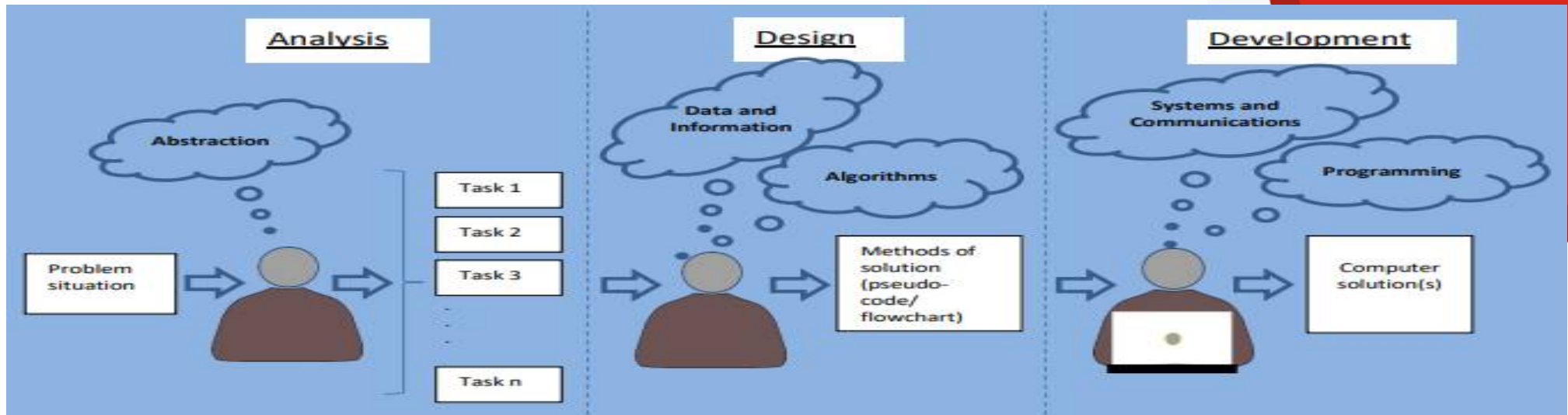
As one of the cornerstone of technology, the impact of Computing has become so widespread that it has transformed the very practices of those Science, Technologies, Engineering and Mathematics (STEM)

Entry to Finance world specializing in Fintech

In fact, Computing has also gained a momentum in other industries. One such example is the financial services where Banking corporations are looking towards Computing to give them an edge in Fintech and Data Analytics.

What Do I learn?

The curriculum aims to



- inculcate a systematic process of thinking (Computational thinking) for students taking this subject,
- honing their skillsets of problem solving through breaking down a problem into a series of parts (abstraction), formulating steps for solutions (algorithmic thinking) and writing computer programs (programming/coding) to produce the solutions.

What Do I **learn**?

Three main themes:

- Computer as a science
- Computer as a tool
- Computer in society

Data & Information

- Data Management
- Data Representation
- Ethical, Social and Economic Issue

Systems and Communications

- Computer Architecture
- Data Communications

Abstraction and Algorithms

- Problem Analysis
- Algorithm Design

Programming

- Program Development
- Program Testing



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How am I Assessed?

Paper	Mode	Duration	Weighting	Marks	Format	Modules assessed
Paper 1	Written	2 hrs	60%	80 marks	A mixture of <ul style="list-style-type: none"> • Short-answer questions • MCQ questions • Matching questions • Cloze passage • Structured questions 	All modules
Paper 2	Lab Based practical Exam	2 hrs 30 min	40%	70 marks	<ul style="list-style-type: none"> • One question on Spreadsheets • Four to five questions on Programming 	Module 2: Algorithms and Programming Module 3: Spreadsheets

Question: A check digit for an 8-digit number is calculated by:

Sample Question_ 2018 O level P1

- multiplying each digit by 3 or 1 alternately as shown in the following table
- adding together the result of each multiplication
- dividing the total by 10 which gives a remainder
- subtracting the remainder from 10 to give the check digit, unless the remainder is 0.

If the remainder is zero (0), the check digit is 0.

The calculation of the check digit for the number 19483725 is:

Number	1	9	4	8	3	7	2	5
Multiply by	3	1	3	1	3	1	3	1
Result	3	9	12	8	9	7	6	5

$$\text{Total} = 3 + 9 + 12 + 8 + 9 + 7 + 6 + 5 = 59$$

$$59 / 10 = 5 \text{ remainder } 9$$

$$\text{Check digit} = 10 - 9 = 1$$

Write an algorithm, using pseudo-code or a flowchart, to generate a check digit using the method given in the question.

Who should Take it?

Passion

Students who are

- 1) Passionate & curious about the world of computing
 - How computers work etc..
- 2) interested & enthusiastic about computer science
 - Programming eg microbit project
- 3) Aspiring to take computing in JC or in Polytechnic

SKILLSETS

Students who

- 1) are good & proficient in Mathematics
- 2) Able to think systematically, logically and meticulous
- 3) Right attitude towards problem solving
- 4) Comfortable in writing programming codes

Criteria to offer **Computing** in Sec 3

- Displayed interests & enthusiasm in programming
- Good Pass in Sec 2 Mathematics & EL
- Based on academic merit and available vacancies

Note:

For parents and students:

A practical session is expected to be scheduled in the afternoon of the week. As such, students with sports CCAs or having language classes in the weekday afternoons might be affected for 1 afternoon within the week.