

Delegate Booklet

Course Title: Getting Ready to Teach the Pearson Edexcel
International GCSE Computer Science (9-1)

Course code: 17IBAN01

About this event

Course Title: Getting Ready to Teach the Pearson Edexcel International GCSE Computer Science (9-1)

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Aims and Objectives of the event

- To equip you with the information you need to successfully plan and deliver the International GCSE Computer Science, including:
 - the structure and content of the qualification
 - how it is assessed, including requirements for the practical examination
 - support available from Pearson and others
 - teaching and delivery strategies
- And to provide you with an opportunity to share ideas and pool your expertise.

Agenda

Time	Item
10.00	Welcome & Introductions
10.10	Overview of the qualification
10:30	Topics 1 and 2
11:05	Paper 02: Application of Computational Thinking
11:45	Topics 3 - 6
12.30	Lunch
13.30	Paper 01: Principles of Computer Science
14.05	Planning and delivery
15.05	Help and support
15:30	Finish

Activity 1 – Paper 02 Requirements (15 minutes)

Purpose:

- To give you an opportunity to familiarise yourself with the format and style of the practical paper.
 - To help you identify what candidates need to know and be able to do in order to tackle it successfully.
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Task 1

List the question command words used in the paper (Sample Materials Booklet starting at page 43), look up their definition in the taxonomy (Appendix 7 of the specification, page 47) and note the marks allocated to this question type.

Command word	Definition	No. of marks
Identify	Requires some key information to be selected from a given piece of code	

Task 2 Question Q01(c)(ii)

This is the question:

- Open the file Q01c in the code editor.

```
myNumbers = [10, 20, 30, 40 ,50, 60, 70, 80, 90, 100]
total
for theNumber in myNumbers:
    total = total + theNumber
    if(theNumber % 2 = 0):
        print("Even")
    else:
        print("Odd")
print(total)
```

- Amend the code to correct three program errors.

Can you identify the three errors?

- Save your amended code as Q01cFINISHED with the correct file extension for the programming language. (3)

Activity 2 – Approaches to teaching problem solving and programming (5 minutes)

Purpose:

- To give you an opportunity to discuss approaches to developing computational thinking and share experiences of teaching it.

The introductions to Topics 1 and 2 state that students are expected to develop a set of computational thinking skills that enable them to design, implement and analyse algorithms for solving problems and must be competent at designing, reading, writing and debugging programs.

In your experience, what's the best way to teach these skills? Start with a problem and break it down into code or start by teaching the structures and syntax of the programming language and work up to how these can be made to do something useful?

Discuss with other course participants the pros and cons of these different approaches.

Approach	Pros?	Cons?
Start with a problem and break it down into code?		
Start by teaching the structures and syntax of the programming language and work up to how these can be made to do something useful?		

Activity 3 – Extended answer question (15 minutes)

Purpose:

- To give you an opportunity to mark an extended response question on your own and then, with colleagues, to consider teaching approaches.

Task 1

Study Example 6.2 in the Sample Question Booklet. Read both candidates' responses to the question on artificial intelligence and, using the mark scheme below, allocate each response a mark out of 6.

Question Number	Answer	Additional Guidance	Mark
5(a)	<p>Characteristics – Any of the following:</p> <ul style="list-style-type: none"> Branch of computer science based on enabling computers to behave like humans/mimic aspects of human intelligence AI is implemented in software. Combines psychology, biology, linguistics, mathematics, neuroscience, and philosophy (ethics) AI is not the same as the general intelligence of human beings <p>Uses – Any of the following:</p> <ul style="list-style-type: none"> Game playing (chess, quiz, video games) Analytics (analyse buying patterns, predicting behaviours, predictive text, financial markets) Image processing (recognising objects/patterns) Logistics (scheduling, order fulfilment) Control systems (cars, manufacturing, weapons, navigation) Expert systems (medical, mechanical, electrical diagnosis) Neural networks (simulating neuron behaviours as in brains) Natural languages processing (chatbots, chatbots, speech recognition) Robotics (dangerous situations, help aged or disabled) <p>Ethical issues – Any of the following:</p> <ul style="list-style-type: none"> Take the work of humans, thereby affecting employment rates Is a computer to be trusted to make decisions (life-death)? If a computer discovers something that humans can't prove, should it be accepted as truth? Do AI machines have rights? Will people be comfortable interacting with machines that are considered intelligent? 	A bulleted list of facts is only worth 2 marks max.	



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Question Number	Answer	Additional Guidance	Mark
	<p>Quality of Written Communication:</p> <ul style="list-style-type: none">• 1-2: Some basic points from at least one of the categories; little clarification or expansion of points; spelling, grammar, and punctuation errors hinder meaning.• 3-4: At least one relevant point from two categories; some clarification or expansion of points; spelling, grammar, and punctuation errors occur, but do not hinder meaning.• 5-6: Relevant points from three categories; comprehensive clarification or expansion of points; spelling, grammar, and punctuation are used accurately and meaning is clear. <p><u>Example:</u> Robots are machines that use artificial intelligence to do jobs that people tell them to. They are not as smart as real humans. (One category only; no expansion; QWC ok; 2 marks max)</p> <p><u>Example:</u> Artificial intelligence is based on getting machines to behave like humans. The cleverness of AI is really in the software. AI is used in game playing. Recently the AI software has beat humans at some games. (Two categories; Some expansion; QWC ok; 4 marks max)</p> <p><u>Example:</u> AI is a branch of computer science that tries to make software imitate human intelligence. However, we're not there yet. It is used in expert systems to diagnose problems with car engines. It can also be used to predict which products people might buy in a grocery store based on their loyalty card purchases. There are problems with AI. One is the issue of ethics. Courts may decide that AI robots have the same rights as humans. People may not like the idea of computers making life and death decisions, such as when to turn off life support systems. This may make people very uncomfortable. (Three categories; Comprehensive expansion; QWC ok; 6 marks max)</p> <p><u>Example:</u> AI: • Making robots behave like humans Uses: • Used to help people with disabilities live in normal homes Ethical Issues: • They will be taking over human jobs and putting people out of work (Three categories; QWC unmarkable; 2 marks max)</p>		6



Task 2

Discuss with colleagues the best way to prepare students to tackle this type of question.

Activity 4 – Aspects of the specification that candidates seem to confuse (15 mins)

Purpose:

- To give you an opportunity to consider aspects of the specification candidates find confusing and consider the best way of avoiding this happening.
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The Principal Examiner for GCSE Computer Science has identified certain aspects of the specification that candidates seem to confuse, e.g.

- Internet and World Wide Web
- Language translators and high-level/low-level programming languages
- Global variables and local variables
- Stored program concept and secondary storage

Discuss ways of dealing with this. From your own teaching experience, can you foresee other such pitfalls?

PERSONAL LEARNING

Things to do:

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Things to avoid

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Your ideas: