



INSPIRE COMPUTING

International

Workbook

YEAR 9

Name: _____

Class: _____



Pearson

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International

Workbook

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Paul Clowrey



Pearson

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Welcome to Inspire Computing!

Whether for school, fun, work or staying in touch with relatives around the world digital technology is all around us.

Through coverage of ICT and Computer Science you will discover how this amazing technology works, how it connects the world together and it has revolutionised the classroom, workplace, and home.

Learning objectives

This is what you will know or be able to do by the end of the lesson.

Activity

You might need to write or draw an answer, circle pictures or words, or tick or match answers.

The internet and the world wide web

1. Learning objectives

- Understand the terms internet and world wide web (WWW).
- Know how to spot a fake or spoof website.
- Understand the importance of being respectful and staying safe online.

2. Starter activity

Draw a line from the term to its description

The internet	The shared pages of content that we access from our computers or smartphones.
The world wide web	A network of connected computers around the world.

3. Online confusion

Describe the difference between the internet and the world wide web.

.....

4. Uses of the internet

Describe three different ways in which we use the internet.

-
-
-

1. Key word definitions

Tick the word or phrase when you know its meaning.

<input type="checkbox"/> digital divide	<input type="checkbox"/> post
<input type="checkbox"/> email	<input type="checkbox"/> spoof
<input type="checkbox"/> fake	<input type="checkbox"/> streaming
<input type="checkbox"/> internet	<input type="checkbox"/> web browser
<input type="checkbox"/> network	<input type="checkbox"/> email
<input type="checkbox"/> online gaming	<input type="checkbox"/> wireless
<input type="checkbox"/> online shopping	<input type="checkbox"/> world wide web (WWW)

Key words definitions

Test your knowledge of the key word.

Instruction

Read this carefully to know what to do.

8. Plenary quick quiz

Plenary quick quiz

A fun way to test what has been understood from the lesson.

Question 1	Question 2	Question 3	Question 4	Question 5
True or false? Only online videos can be embedded in a slide.	Name the device required to record sound.	What is the movement from one slide to another called?	True or false? If the website changes, any embedded content will disappear.	Which of the following is not a form of interactivity?
<input type="checkbox"/> true <input type="checkbox"/> false	<input type="checkbox"/> speaker <input type="checkbox"/> projector <input type="checkbox"/> mouse <input type="checkbox"/> microphone	<input type="checkbox"/> text box <input type="checkbox"/> transition <input type="checkbox"/> animation <input type="checkbox"/> sound effect	<input type="checkbox"/> true <input type="checkbox"/> false	<input type="checkbox"/> navigation <input type="checkbox"/> website links <input type="checkbox"/> use of logos <input type="checkbox"/> sound clips

We hope you will find this book useful in developing your knowledge of digital technology, its effective use of applications and in supporting future learning.

Each topic includes easy to understand theory, real-world examples, and ideas for further investigation. You can also test your knowledge of keywords and regular exam-quality questions with supported answers. A checkpoint at the end of each lesson is a quick and easy way to check your own understanding.

Short answer questions

Questions to solidify your learning and prepare you for your exam.

Unit 5: Programming Part 1: End-of-unit assessment

Unit 5: Short answer questions

1. A typical 4-mark question

You are teaching a class of young students about databases and the importance of relational operators.

Describe the purpose of relational operators and give the function of at least three operators.

2. Another 4-mark question

You are starting a new job at a large programming organisation that creates large-scale computer models and simulations.

Describe the difference between a model and a simulation. Include an example of each.

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Unit 5: Programming Part 1: Revision checklist

Revision checklist

	MIND-MAP	MISSING WORDS	WRITE A QUIZ	FLASHCARDS	COVER-AND-WRITE
US L1 - An introduction to programming					
US L2 - Sorting algorithms					
US L3 - Using operators					
US L4 - BIDMAS					
US L5 - Relational operators					
US L6 - Using variables					
US L7 - Sequence, selection and iteration					
US L8 - Modelling and simulations					
US L9 - Error checking					
US L10 - Subprograms					

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Revision checklist

Ensuring that you are covering all revision forms for your learning and finding what works best for you!

Algorithms and computational thinking

Learning objectives

1. Understand the terms algorithmic and computational thinking.
2. Understand the terms abstraction and decomposition.
3. Know how to apply abstraction to a simple problem.

1. Key word definitions

Tick the word or phrase when you know its meaning.

 abstraction

 computational thinking

 algorithmic thinking

 decomposition

2. Starter activity

Describe what is meant by the term 'algorithmic thinking'.

.....

.....

.....

3. Computational thinking

Draw a line from each term to its description.

computational thinking	removing any information that is not required
abstraction	breaking down a problem into smaller parts
decomposition	trying to think like a computer scientist

4. Abstraction

Imagine that you are planning a train journey. What information is important, and what could be ignored? Tick your choices.

Information	Important	Could be ignored
The name of the place that you are going to		
What the scenery is like		
How you will buy your train ticket		
What time your train leaves the station		
What the weather will be like on the day		
How many other passengers there are		
How you will get to the train station		

5. Decomposition

Using decomposition, list four key parts of playing a video game on a console.

1.
2.
3.
4.

6. Driverless cars

How might abstraction and decomposition be used to help design a driverless car? Give one example for each.

Abstraction:

.....

Decomposition:

.....

7. Jobs

List three jobs that require the use of computational thinking.

1.
2.
3.

8. Plenary quick quiz

Question 1	Question 2	Question 3	Question 4	Question 5
Which word is not associated with abstraction?	True or false? Decomposition is when we group problems together.	Which of these is a term for a series of logical steps?	Which detail should not be included in an abstraction of a dog?	True or false? There are more jobs in computer science than ever before.
<input type="checkbox"/> remove <input type="checkbox"/> solution <input type="checkbox"/> focus <input type="checkbox"/> add	<input type="checkbox"/> true <input type="checkbox"/> false	<input type="checkbox"/> algorithm <input type="checkbox"/> anagram <input type="checkbox"/> application <input type="checkbox"/> abstraction	<input type="checkbox"/> four legs <input type="checkbox"/> called Rover <input type="checkbox"/> two ears <input type="checkbox"/> tail	<input type="checkbox"/> true <input type="checkbox"/> false

Sorting algorithms

Learning objectives

1. Understand the purpose of sorting algorithms.
2. Know what a bubble sort is and how it works.
3. Know how to create a simple representation of a bubble sort.

1. Key word definitions

Tick the word or phrase when you know its meaning.

 algorithm

 less than

 bubble sort

 order

 greater than

 pass

2. Starter activity

What does a sorting algorithm do?

.....

3. Order, order

What is the difference between ascending and descending order?

.....

.....

4. Sorting algorithms

Give three real-life examples where we might use a sorting algorithm.

1.

2.

3.

5. Bubble sort process

The statements below describe how a bubble sort works, but they are in the wrong order. Number them from 1 to 5 to put them in the correct order.

Incorrect order	Correct order
The first pass ends.	
This is repeated until the end of the sequence is reached.	
The process is then repeated until no more values need to be swapped.	
The first two values are compared and swapped if not in order.	
The next two values are compared and swapped if not in order.	

6. Bubble sort example

Write out the first pass of a bubble sort to put the following sequence in ascending order:
1, 6, 3, 4, 7.

First pass
1, 6, 3, 4, 7 becomes
.....
.....
.....

7. The second pass

In the example in question 6, the sequence is in order after the first pass. Explain why a second pass is still needed.

.....

.....

8. Plenary quick quiz

Question 1	Question 2	Question 3	Question 4	Question 5
True or false? A bubble sort compares pairs of values.	In which situation might a sorting algorithm not be used?	What is the term for each full run through a bubble sort?	What real-world example is often used to describe a bubble sort?	True or false? A bubble sort starts with the last two values in a sequence.
<input type="checkbox"/> true <input type="checkbox"/> false	<input type="checkbox"/> music collection <input type="checkbox"/> train timetable <input type="checkbox"/> contact book <input type="checkbox"/> online photo album	<input type="checkbox"/> pass <input type="checkbox"/> play <input type="checkbox"/> plus <input type="checkbox"/> part	<input type="checkbox"/> a door opening <input type="checkbox"/> riding a bike <input type="checkbox"/> a fizzy drink <input type="checkbox"/> growing a plant	<input type="checkbox"/> true <input type="checkbox"/> false

