

Keywords

Computational thinking, Abstraction, Decomposition, Algorithmic Thinking.
DEFINE THE KEYWORDS.

Algorithms

Introduction to Algorithms

Input Validation



CARR MANOR
COMMUNITY SCHOOL

Objectives

ADVANCED:
Understand the term and processes in computational thinking.

EXPERT:
Be able to use the skills of:
- Abstraction
- Decomposition
- Algorithmic thinking.

**COMPUTATIONAL
THINKING**

the use of computers to solve problems.

ABSTRACTION

representing 'real world' problems in a computer using variables and symbols and removing unnecessary elements from the problem.

DECOMPOSITION

breaking down a large problem into smaller sub-problems.

**ALGORITHMIC
THINKING**

identifying the steps involved in solving a problem.



Task



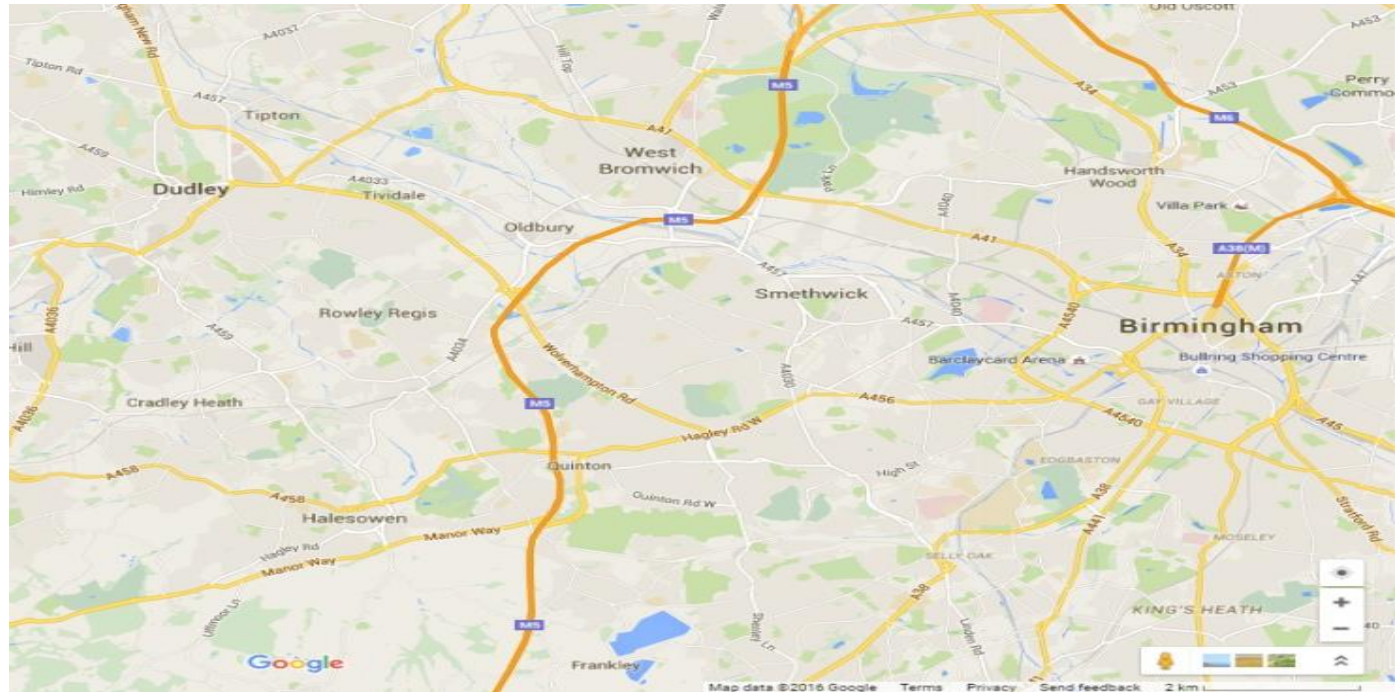
CARR MANOR
COMMUNITY SCHOOL

How could abstraction be used to represent a map on a computer?

Objectives

ADVANCED:
Understand the term and processes in computational thinking.

EXPERT:
Be able to use the skills of:
- Abstraction
- Decomposition
- Algorithmic thinking.



Towns/places would be represented with their name, maybe a circle or shape. Roads would be lines. Road names may be on the lines. Fields, hedges, houses etc. would not necessarily be in the model.

C O M P U T E R S C I E N C E

Decomposition



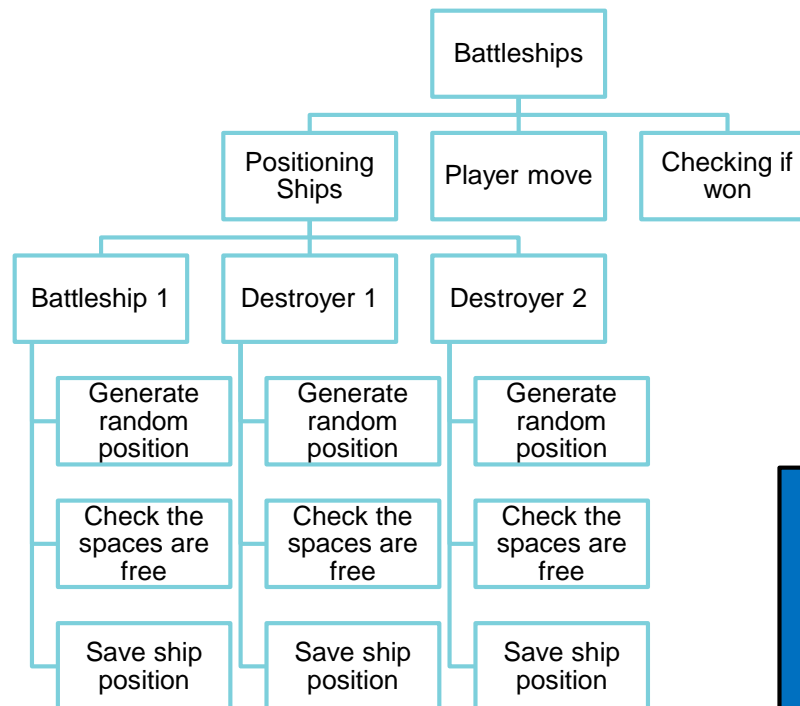
CARR MANOR
COMMUNITY SCHOOL

Objectives

ADVANCED:
Understand the term and processes in computational thinking.

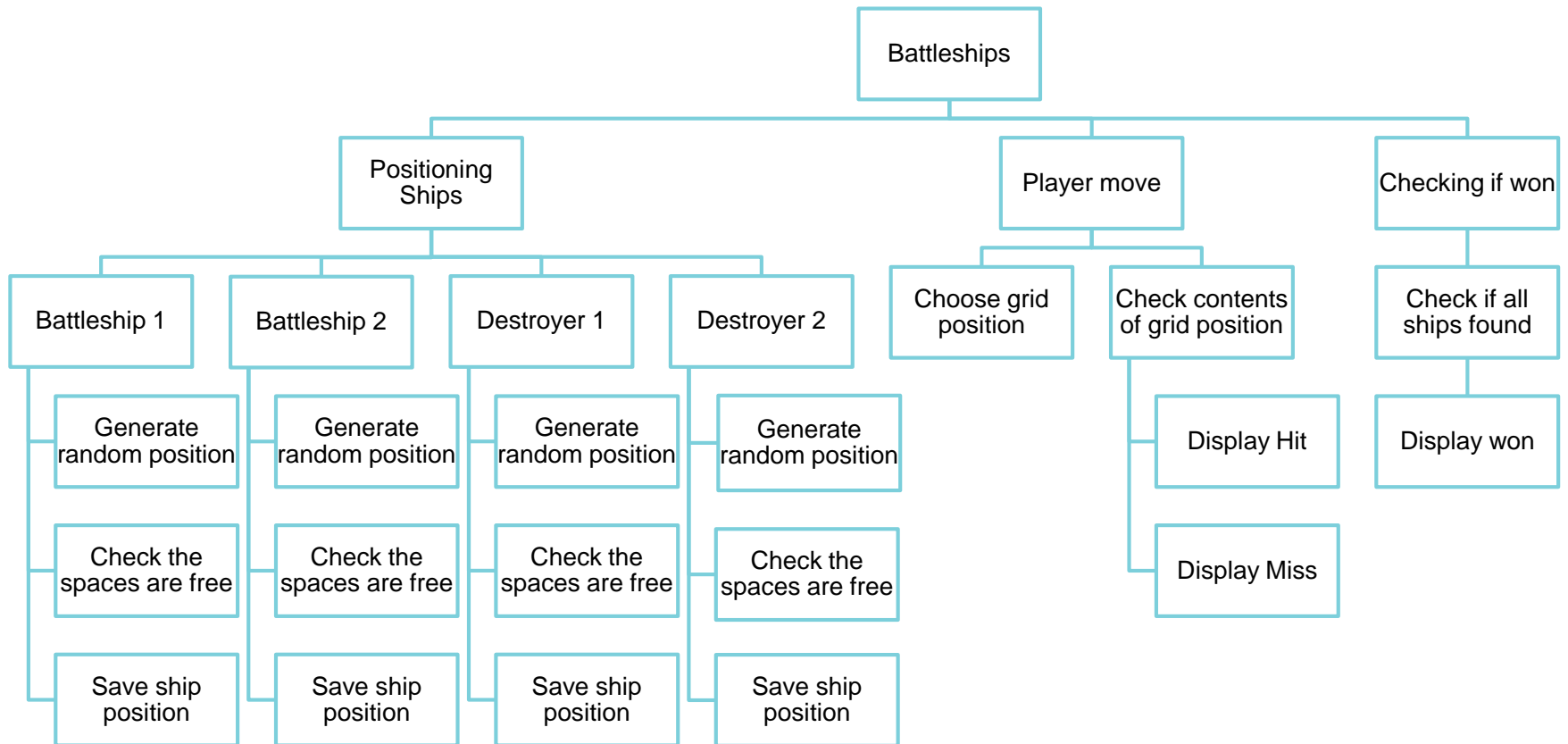
EXPERT:
Be able to use the skills of:
- Abstraction
- Decomposition
- Algorithmic thinking.

The breaking down of large problems into smaller problems: Smaller problems are easier to solve. They can be created independent of the other problems. They can be tested independently, then combined to produce the full problem. There is not always one right answer. A problem could be decomposed in several valid ways.



Can you complete this decomposition diagram?

Example Answer



Algorithmic Thinking



CARR MANOR
COMMUNITY SCHOOL

Identifying the steps involved in solving a problem.

Objectives

ADVANCED:
Understand the term and processes in computational thinking.

EXPERT:
Be able to use the skills of:
- Abstraction
- Decomposition
- Algorithmic thinking.

1. What are the steps involved with making a cup of tea?

2. What are the steps involved in the calculation $200 \div 12$?

3. What are the steps involved in checking if a player has hit part of a ship in battleships?

4. How could you make the 'Positioning of Ships' more efficient?

