

Programming in the Digital Technologies curriculum

Algorithms Levels 7 and 8

Introduction

This video will cover

Curriculum Links

Defining a problem

Working out requirements

Designing an algorithm

Curriculum Links

Defining a problem

“Define and decompose real-world problems taking into account functional requirements and sustainability (economic, environmental, social), technical and usability constraints”

“Design algorithms represented diagrammatically and in English, and trace algorithms to predict output for a given input and to identify errors”

Curriculum Links

Defining a problem

“Define and decompose real-world problems taking into account functional requirements and sustainability (economic, environmental, social), technical and usability constraints”

Functional requirements

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Design an algorithm

Defining a problem

Classic guessing game

Guess a number 1 – 100



Too high x

Too low x

Correct ✓

Defining a problem

Classic guessing game


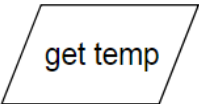
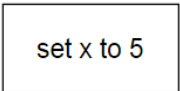


Problem: “Create a guessing game program”

Requirements

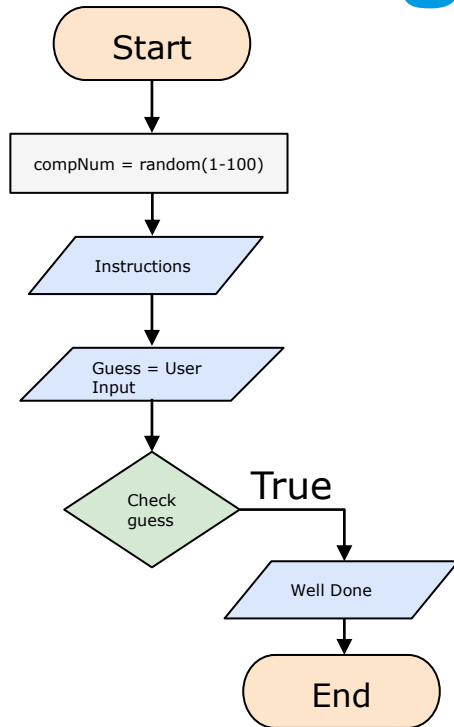
- Store a random number (1-100)
- Give player instructions
- Store the player's guess
- Check player's guess
- Guess was correct
- Guess was incorrect
- Guess was too low
- Guess was too high
- Allow the player 7 guesses
- Allow the player to play another game
- Keep score

Design an Algorithm

Flowchart Conventions

Symbol	Meaning	Symbol	Meaning
	Start / End		Input / Output
	Process		Order of operation
	Decision		

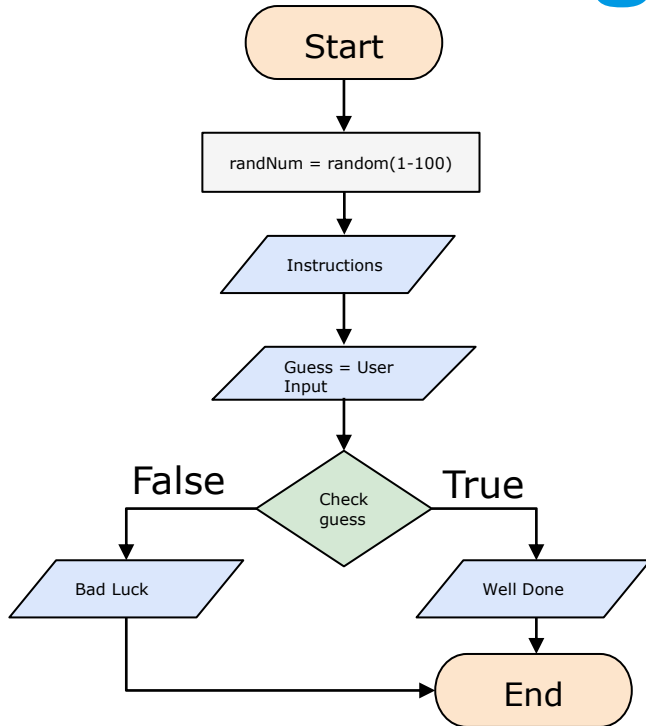
Design an Algorithm



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Design an Algorithm



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Check player's guess

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Guess was incorrect

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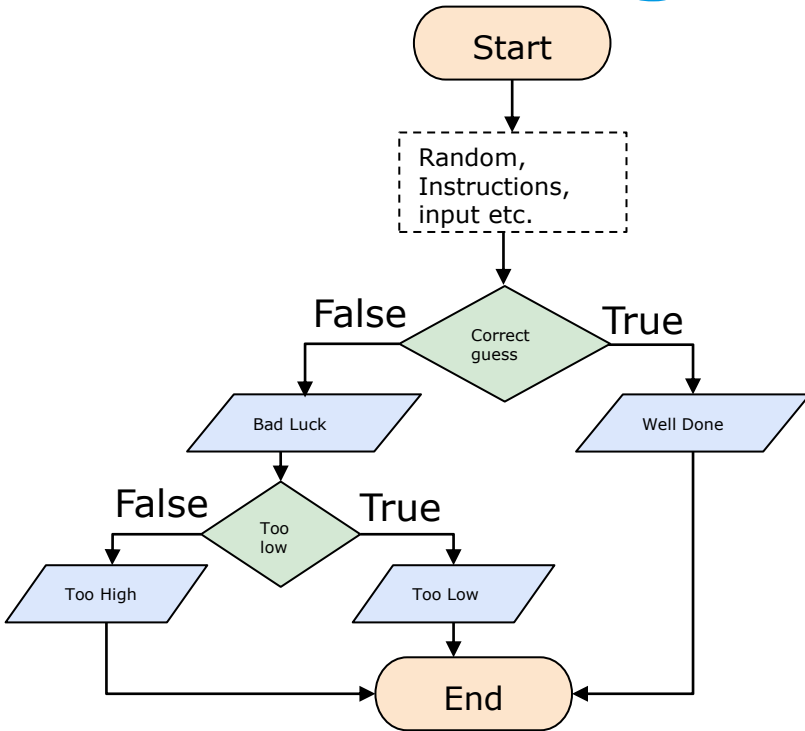
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Design an Algorithm



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Give player instructions

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Check player's guess

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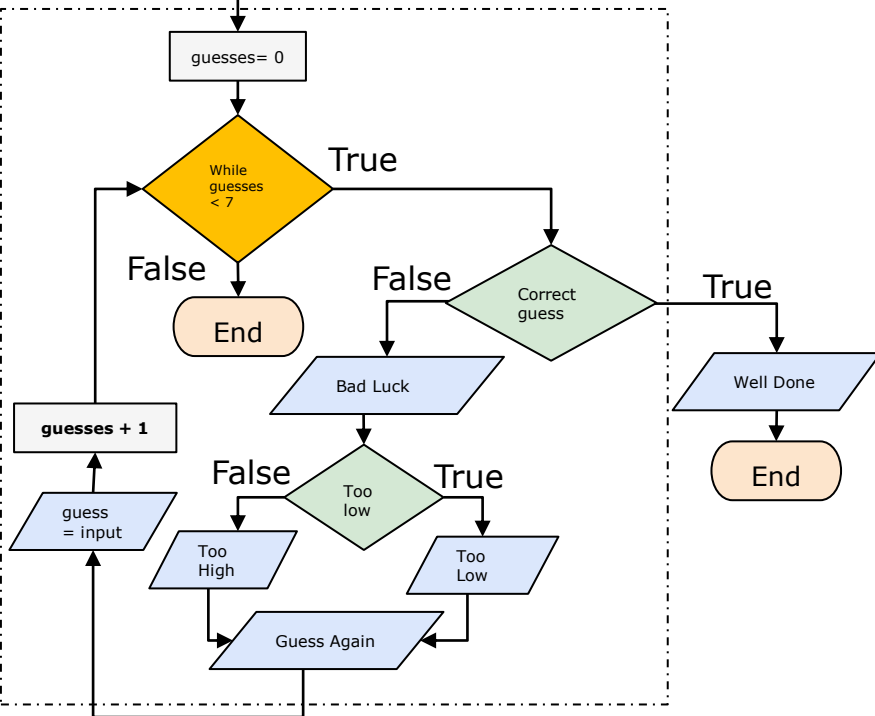
Allow the player 7 guesses

Allow the player to play another game

Keep score

Design an Algorithm

Start, Random, Instructions, input etc.



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Give player instructions

Store the player's guess

Check player's guess

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Review

In this video tutorial we covered

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Defining a problem

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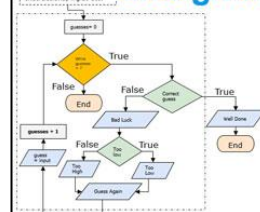


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Design an Algorithm



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Algorithms Part B

The next video tutorial will cover

Creating a “play again” function and keeping score

Representing the algorithm using English instructions

Testing and Tracing