

GCSE (9–1)

Teacher Guide

COMPUTER SCIENCE

J276

For first teaching in 2016

Code Challenge Worked Example: Mastermind

Version 1



CODE CHALLENGE WORKED EXAMPLE: MASTERMIND

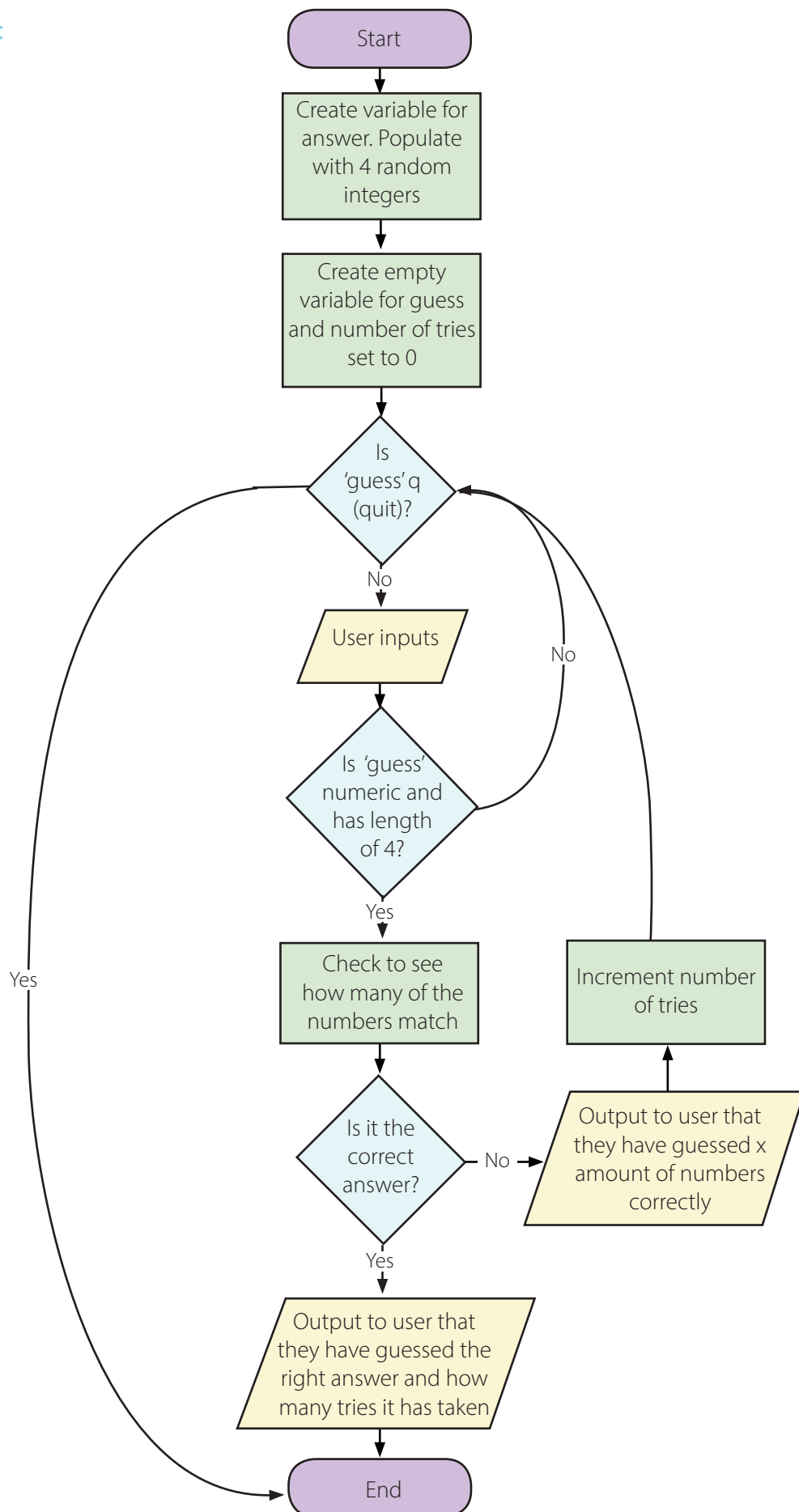
For each challenge, solve it using:

- A flowchart
- Pseudocode (see [GCSE Pseudocode Guide](#))
- Programme code (any high level language will do)

The challenge: Mastermind

Generate a random 4 digit number. The player has to keep inputting 4 digit numbers until they guess the randomly generated number. After each unsuccessful try it will say how many numbers they got correct, but not which position they got right. At the end of the game it will congratulate the user and say how many tries it took.

The flowchart



Pseudocode

```
correctAnswer = ''

//generate number
for i=1 to 4
    tempChar = str(random.randint(0,9))
    correctAnswer = correctAnswer + tempChar

guess = ''
attempts = 0

while guess != "q"
    guess = input("Please enter your 4 digit number or q to quit :")

    //Make sure it is 4 digits long and contains only digits
    if guess.isnumeric() and len(guess) == 4
        numCorrect = 0
        //How many numbers did they guess correctly?
        for i=0 to 3
            if guess[i] == correctAnswer[i]
                numCorrect += 1

        //Have they guessed it?
        if(numCorrect == correctAnswer)
            print("Well done... That took you "+ str(attempts) + " attempts!")
            break
        else:
            print("That is not right. You guessed "+ str(numCorrect) +
                " numbers correctly this time")
            attempts += 1
```

Program code (with comments):

```
import random
correctAnswer = ''
#generate number
for i in range (4):
    tempChar = str(random.randint(0,9))
    correctAnswer = correctAnswer + tempChar

guess = ''
attempts = 0

while guess != "q":
    choice = input("Please enter your 4 digit number or q to quit :")

    #Make sure it is 4 digits long and contains only digits
    if guess.isnumeric() and len(guess) == 4:
        numCorrect = 0

        #How many numbers did they guess correctly?
        for i in range(0,3):
            if guess[i] == correctAnswer[i]:
                numCorrect += 1

        #Have they guessed it?
        if(choice == correctAnswer):
            print("Well done... That took you "+ str(attempts) +
                " attempts!")
        else:
            print("That is not right. You guessed "+ str (numCorrect) +
                " numbers correctly this time")
            attempts += 1
```



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