Qualification Accredited

OCR
Oxford Cambridge and RSA

GCSE (9–1)
Teacher Guide

COMPUTER SCIENCE

J276
For first teaching in 2016

Code Challenge Worked Example: Mastermind

Version 2

www.ocr.org.uk/computerscience

CODE CHALLENGE WORKED EXAMPLE: MASTERMIND

For each challenge, solve it using:

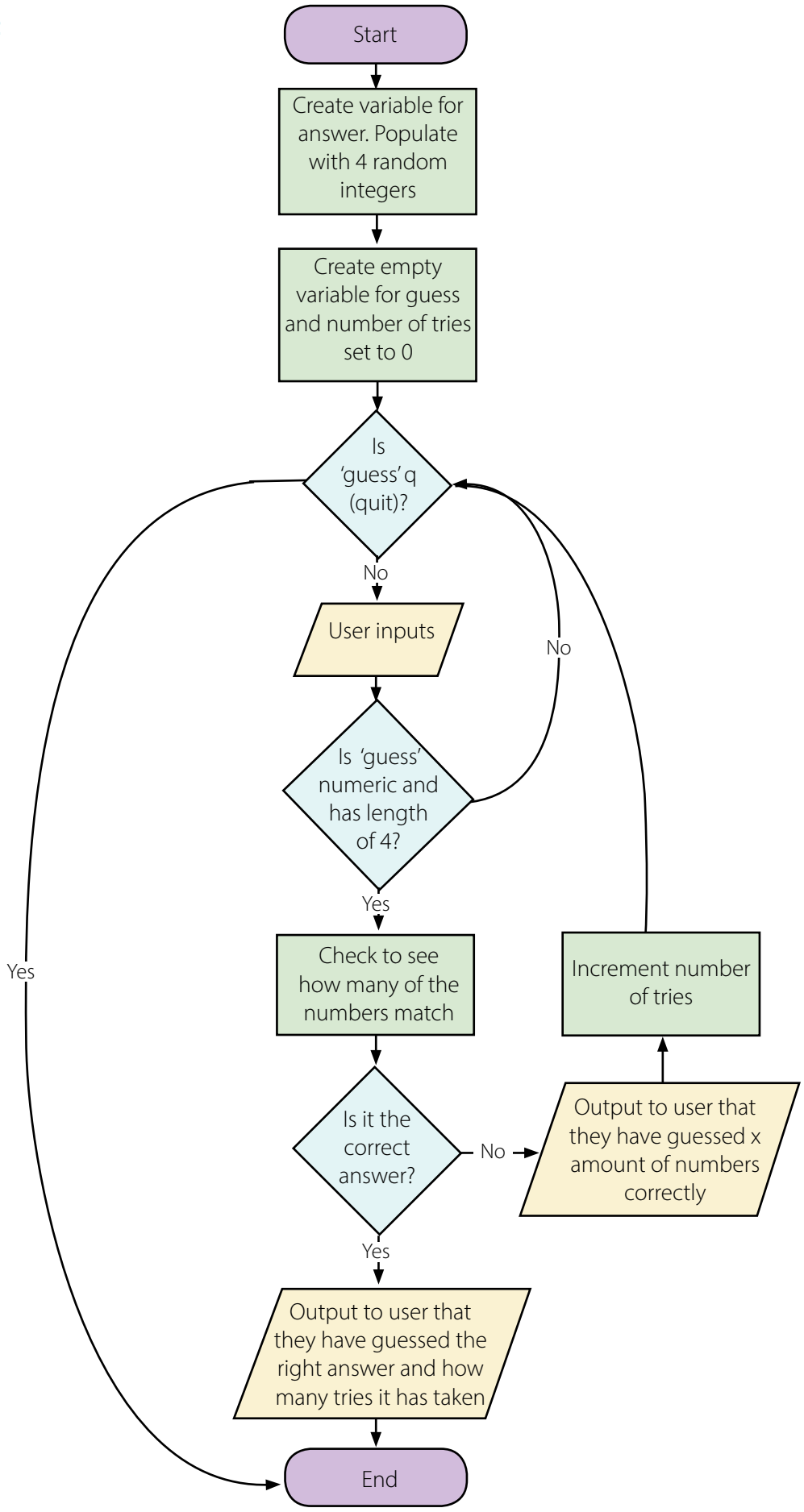
- A flowchart
- Pseudocode (see GCSE Pseudocode Guide)
- Programme code (any high level language will do)

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.

Copyright © OCR 2017

The flowchart



Copyright © OCR 2017

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(choice == 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
```


Copyright © OCR 2017

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":
   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 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
```


Copyright © OCR 2017

The small print

We'd like to know your view on the resources we produce. By clicking on the 'Like' or 'Dislike' button you can help us to ensure that our resources work for you. When the email template pops up please add additional comments if you wish and then just click 'Send'. Thank you.

Whether you already offer OCR qualifications, are new to OCR, or are considering switching from your current provider/awarding organisation, you can request more information by completing the Expression of Interest form which can be found here: www.ocr.org.uk/expression-of-interest

OCR Resources: *the small print*
OCR's resources are provided to support the delivery of OCR qualifications, but in no way constitute an endorsed teaching method that is required by OCR. Whilst every effort is made to ensure the accuracy of the content, OCR cannot be held responsible for any errors or omissions within these resources. We update our resources on a regular basis, so please check the OCR website to ensure you have the most up to date version.

This resource may be freely copied and distributed, as long as the OCR logo and this small print remain intact and OCR is acknowledged as the originator of this work.

OCR acknowledges the use of the following content:
Square down and Square up: alexwhite/Shutterstock.com

Please get in touch if you want to discuss the accessibility of resources we offer to support delivery of our qualifications: resources.feedback@ocr.org.uk

Looking for a resource?

There is now a quick and easy search tool to help find **free** resources for your qualification:

www.ocr.org.uk/i-want-to/find-resources/

www.ocr.org.uk/gcsereform

OCR Customer Contact Centre

General qualifications

Telephone 01223 553998
Facsimile 01223 552627
Email general.qualifications@ocr.org.uk

OCR is part of Cambridge Assessment, a department of the University of Cambridge. *For staff training purposes and as part of our quality assurance programme your call may be recorded or monitored.*

© **OCR 2017** Oxford Cambridge and RSA Examinations is a Company Limited by Guarantee. Registered in England. Registered office 1 Hills Road, Cambridge CB1 2EU. Registered company number 3484466. OCR is an exempt charity.

Cambridge Assessment

LLOYD'S REGISTER · LRQA
ISO 9001
UKAS MANAGEMENT SYSTEMS
001