H446 Computer Science

03_Programming

CODING CHALLENGES FOR INFORMATION DAY

Basic operations

Write a program to print out the number of seconds in a 30 day month

Write a program to print out the number of seconds in a year

A high speed train can travel at an average speed of 150 mph, how long will it take a train travelling at this speed to travel from London to Glasgow which is 414 miles away? Give your answer in minutes

If you are going on holiday to France how many Euros would you get when you convert £500 at an exchange rate of £1 = €1.20 ?

On return from your holiday you now have €320, how much GBP would you receive at an exchange rate of £1 = €1.32?

Insert brackets in the expression 36/9-2 to get:
   a) 2
   b) 5.12

Variables

Write a program that assigns the variables length and width to be 18 and 7 respectively. Use the variables to calculate the perimeter and area of a rectangle

The volume of a sphere is given by V = (4/3)pi*r^3, use python to find the volume of a sphere with a radius of 10 cm

Write a python program that defines a variable called daysInEachSchoolYear and assign 192 to this variable. The program should then print out the total hours that you spend in school from year 7 to year 11, assuming that you spend 6 hours at school each day

What is the output after running the following code?

```
score = 24
numberOfPieces = 2
newScore = score *2
print(newScore)
```

True or false – an expression can be assigned to a variable?

Data types

Write a program that stores your favourite quotation in a variable called quote

# What is the data type of donkey in the code snippet below?
donkey = 34.67

Define a variable called name that assigns your name to it

Write a program that asks the user for three numbers and outputs the sum

Write a program that will ask the user for their name and age and output this back to the screen with a nice message

What letter will be printed on the screen after running the following code?

```
title="Python for key stage 4"
letter = title[3]
print(letter)
```

What will the following code produce?

```
title = "Python for key stage 4"
for letter in title:
    print(letter)
```

Functions

Define a function called double, that takes a number and return the number doubled

Define a function called perimeterOfRectangle that takes two numbers to represent the length and width of a rectangle and returns the perimeter of the rectangle

Define a function called areaOfCircle that takes one number as an input to represent the radius, and returns the area of the circle

Control structures

SELECTION STATEMENTS AND ITERATION

Write a program that asks the user to enter two numbers, it should use a selection statement to output the larger of the two numbers

Define a function called larger(), that takes two integers and returns the larger of the two

Write a function called printUpto() that takes a number as input and output all the whole numbers from 1 up to and including the given number

Arrays

Given the list bankHolidaysMonth = [1, 0, 1, 1, 2, 0, 0, 1, 0, 0, 0, 2] , where each element represents the number of bank holidays in a month. For example in January there is 1, in February 0, March there is 1 etc. Write a function called bankHoliday(), that takes a number to represent the month and return the number of bank holidays in that month. Example: bankHoliday(5) would return 2

Define a function called addHello(), that takes any list and append the word "hello" to the list

Define a function called sumList(), that takes a list as an input and returns the sum of all the elements in the list

A word is a palindrome if it reads the same thing in both directions. For example "civic", "radar", "level", "redder", "madam" are all palindromes. Write a function called isPalindrome(), that takes any word and returns True if the word is a palindrome or False otherwise