

# MATH5306M Introduction to Programming

2025/26

## Assignment 1

This worksheet contains the assigned programming tasks for the first assessed coursework, due at **12 midday on Monday 3rd November**.

Submit your solution as an individual `.py` file for each question. Your programme should run without requiring any additional actions from myself. You should also submit a text file (in any readable format) containing a paragraph (around 50 words; no more than 200) for each question describing the choices you have made in designing and implementing your solution. For example, you may have made certain choices because they make the programme more readable or efficient.

Your submission will be assessed both on how successfully it performs the assigned task, and on your design choices and coding style. Your written description will not be marked, but what you write will be used to help me understand and assess your code.

---

### Task 1: Median of Three Values

Write a function that takes three numbers as arguments, and returns the median value of those arguments as its result. Include a main programme that reads three values from the user and displays their median.

### Task 2: The Twelve Days of Christmas

The Twelve Days of Christmas is a repetitive song that describes an increasingly long list of gifts sent to one's true love on each of 12 days. A single gift is sent on the first day. A new gift is added to the collection on each additional day, and then the complete collection is sent. The first three verses of the song are shown below. The complete lyrics are available on the internet.

```
On the first day of Christmas  
My true love sent to me  
A partridge in a pear tree.  
  
On the second day of Christmas  
My true love sent to me  
Two turtle doves  
And a partridge in a pear tree.  
  
On the third day of Christmas  
My true love sent to me  
Three French hens,  
Two turtle doves  
And a partridge in a pear tree.
```

Your task is to write a programme that displays the complete lyrics for The Twelve Days of Christmas.

### Task 6: Is a Number Prime?

A prime number is an integer greater than 1 that is only divisible by one and itself. Write a function that determines whether or not its argument is prime, returning `True` if it is, and `False` otherwise. Write a main programme that reads an integer from the user and displays a message indicating whether or not it is prime. You may find researching the Sieve of Eratosthenes algorithm useful in this question.

### Task 10: Magic Dates

A magic date is a date where the day multiplied by the month is equal to the two digit year. For example, June 10, 1960 is a magic date because June is the sixth month, and 6 times 10 is 60, which is equal to the two digit year. Write a function that determines whether or not a date is a magic date. Use your function to create a main programme that finds and displays all of the magic dates in the 20th century.