資工系計算機程式設計實習Lab 1

1. Write a program that asks the user to enter two numbers, obtains them from the user and prints their sum, product, difference, quotient and remainder.
2. **(Converting from seconds to hours, minutes and seconds)** Write a program that asks the user to enter the total time elapsed, in seconds, since an event and converts the time to hours, minutes and seconds. The time should be display as hours:minutes:seconds. [Hint: Use the remainder operator]
3. **(Odd or Even)** Write a program that reads an integer and determines and prints whether it’s odd or even. [Hint: Use the remainder operator. An even number is a multiple of two. Any multiple of two leaves a remainder of zero when divided by 2.]
4. **(Multiples)** Write a program that reads in two integers and determines and prints whether the first is a multiple of the second. [Hint: Use the remainder operator.]
5. **(Physics: finding runway length)** Given an airplane’s acceleration *a* and take-off speed v, you can compute the minimum runway length needed for an airplane to take off using the following formula:

Write a program that prompts the user to enter v in meters/second (m/s) and the acceleration a in meters/second squared(m/), then, displays the minimum runway length. Here is a sample run:

Enter speed and acceleration: 60 3.5

The minimum runway length for this airplane is 514.286 meters.

1. **(Cost of driving)** Write a program that prompts the user to enter the distance to drive, the fuel efficiency of the car in miles per gallon, and the price per gallon then displays the cost of the trip. Here is a sample run:

Enter the driving distance: 900.5

Enter miles per gallon: 25.5

Enter price per gallon: 3.55

The cost of driving is $125.36.

1. **(Science: Calculating energy)** Write a program that calculates the energy needed to heat water from an initial temperature to a final temperature. Your program should prompt the user to enter the amount of water in kilograms and the initial and final temperatures of the water. The formula to compute the energy is

Q = M \* (finalTemperature – initialTemperature) \* 4184

where M is the weight of water in kilograms, initial and final temperatures are in degrees Celsius, and energy Q is measured in joules. Here is a sample run:

Enter the amount of water in kilograms: 55.5

Enter the initial temperature: 3.5

Enter the final temperature: 10.5

The energy needed is 1625484.0

1. **(Arithmetic, Largest Value and Smallest Value)** Write a program that inputs three different integers from the keyboard, then prints the sum, the average, the product, the smallest and the largest of these numbers. Use only the single-selection form of the **if** statement you learned in the class. The screen dialogue should appear as follows

Enter three different integers: 13 27 14

Sum is 54

Average is 18

Product is 4914

Smallest is 13

Largest is 27