Developer Test

These assignments are intended to test your skills as developer in designing and implementing specific solutions. They must be implemented in your preferred language and submitted in an online repository, such as github.

Problem 1

We have two sequence of data called respectively ***haystack*** and ***needle***.
We need to search for all the occurrences of any sequence of data having length greater or equal to ***threshold*** that appear both in haystack and needle.

For example given:

```
haystack = "vnk2435kvabco8awkh125kjneytbcd12qjhb4acd123xmnbqwnw4t"
needle = "abcd1234"
threshold = 3
```

the expected output would be:

```
sequence of length = 3 found at haystack offset 9, needle offset 0
sequence of length = 5 found at haystack offset 27, needle offset 1
sequence of length = 5 found at haystack offset 38, needle offset 2
```

Considerations

The algorithm should be optimized considering haystack to be indefinitely big and needle in the range of 1.000 – 1.000.000 bytes.
Please consider both the haystack and the needle as buffer of arbitrary bytes, not necessarily printable characters (so they are not standard "strings).

Problem 2

You need to build a simple scheduler application. It will read a config file (xml, json, etc) that has a list of tasks and each task a list of schedules. Schedules can be daily, weekly or monthly and can be repeated (for example daily and repeat every 1 hour).

1. Design an object model to represent the necessary entities
2. Implement the scheduler to start each task at the requested time

It's imperative that the task is started at the exact time it's requested. Also take into account cases when a task is still running when it should start again.

Problem 3

Given a vector of positive and negative integers, write a program that finds the continous sequence with maximal sum and prints out start index, end index and the sum.

Example:
For vector 12, -34, 40, 6, -10, 56, 12, -1, -15, 10, 4 start index is 2, end index 6 and the sum 104.