DigitalGate Coding challenges

POSIX Threading

Write a program with the following structure and very shortly explain what challenges you faced:

- Consist of two different threads
- Consist of a global integer counter.
- One thread should enter the following loop:
  1. Sleep for a random interval between 1 to 1000 milliseconds
  2. Print and increment the global counter
- The other thread should:
  1. Sleep for a random interval between 1 to 1000 milliseconds
  2. Read an integer value from the stdin, and store it in the global counter

POSIX Signals

Write a simple program that:

- Sleeps for 1 second
- Increments an integer counter

When Ctrl + c is pressed in the terminal, the number of seconds elapsed shall be printed and the program must continue counting without exiting.

POSIX Socket

Write a simple program that: - Listens to incoming UDP packets and prints them along with their originating IP address

Explain how you tested your app.

Serialization

We have a simple structure in the following format:

```
typedef struct
{
    int Code;
    char * Reason;
} Crash;
```

We need to send this data to another application with UDP sockets. Convert this object to a buffer that can be sent via UDP socket. NOTE: There is no need to actually send the data, the objective is to just construct the buffer so that it can be sent over the network.

State machines

Create a simple C function, with the following signature, which every time it is called, returns the next entry in the Fibonacci sequence:

```
unsigned long Next();
```