**CS2263 Assignment 1**

Kohdy Nicholson

isfib.c:

```c
/*
    isfib.c

    Description:
    Simple function for determine whether or not a given value is part of the fib
 sequence.

    Author:
    Kohdy Nicholson

    Date:
    2020-05-06
*/

#include <limits.h>
#include <math.h>

int isfib(int number){
    // Check for inputs outside limits.
    if(number < 0 || number > INT_MAX){
        return -1;
    }

    int fibnum = 0;
    int next_fib_num = 1;
    int temp;

    while(fibnum <= number){
        if(fibnum == number) return 1;
        temp = fibnum;
        fibnum = next_fib_num;
        next_fib_num += temp;
    }

    return 0;
}
```

helpers.h:

```c
/*
```

```
    helpers.h

    Description:
    Header file for the helper functions.

    Author:
    Kohdy Nicholson

    Date:
    2020-05-06
*/

int isprime(int number);
int isfib(int number);
```

testingfib.c:

```
/*
    testingfib.c

    Description:
    Tests for the user for isfib().

    Author:
    Kohdy Nicholson

    Date:
    2020-05-06
*/

#include <stdio.h>
#include <limits.h>
#include "helpers.h"

int main(int argc, char** argv){
    int val;
    int result;
    int input;

    printf("\nPlease enter a value: ");
    input = scanf("%d", &val);

    if(input != 1){
        printf("Unable to read the value.\n");
        return 1;
```

```c
    }

    result = isfib(val);

    switch (result){
        case 0:
            printf("%d is not a fib number.\n\n", val);
            break;
        case 1:
            printf("%d is a fib number.\n\n", val);
            break;
        case -1:
            printf("Invalid input. Please enter a valid integer.\n\n");
            break;
        default:
            break;
    }

    return 0;
}
```

testingfib.exe output:

```
PS C:\Users\Kohdy\Documents\CS2263\W1Ass\DE> gcc isfib.c testingfib.c -o testingfib
PS C:\Users\Kohdy\Documents\CS2263\W1Ass\DE> .\testingfib.exe

Please enter a value: 8
8 is a fib number.

PS C:\Users\Kohdy\Documents\CS2263\W1Ass\DE> .\testingfib.exe

Please enter a value: 13
13 is a fib number.

PS C:\Users\Kohdy\Documents\CS2263\W1Ass\DE> .\testingfib.exe

Please enter a value: 15
15 is not a fib number.

PS C:\Users\Kohdy\Documents\CS2263\W1Ass\DE> .\testingfib.exe

Please enter a value: -42
Invalid input. Please enter a valid integer.

PS C:\Users\Kohdy\Documents\CS2263\W1Ass\DE>
```

unittests.exe output:

```
PS C:\Users\Kohdy\Documents\CS2263\W1Ass\DE> gcc isfib.c unittests.c -o unittest
PS C:\Users\Kohdy\Documents\CS2263\W1Ass\DE> .\unittest.exe

*** Running tests for isfib.c ***


NAME                                    INPUTS              RESULT
----                                    ------              ------
isFibTest():                            13                  SUCCESS
isNotFibTest():                         24                  SUCCESS
passOnLowerBoundTest():                 0                   SUCCESS
passOnUpperBoundTest():                 2147483647          SUCCESS
failOnGreaterThanIntMaxValueTest():     4294967295          SUCCESS
failOnNegativeValueTest():              -42                 SUCCESS

*** Running tests completed! ***
```

Directory Listing:

```
PS C:\Users\Kohdy\Documents\CS2263\W1Ass\DE> dir


    Directory: C:\Users\Kohdy\Documents\CS2263\W1Ass\DE


Mode                 LastWriteTime         Length Name
----                 -------------         ------ ----
-a----        2020-05-06   3:27 PM            212 helpers.h
-a----        2020-05-07  10:10 AM            671 isfib.c
-a----        2020-05-07  12:04 PM         141982 Report.docx
-a----        2020-05-07  12:12 PM            768 testingfib.c
-a----        2020-05-07  12:13 PM          46406 testingfib.exe
-a----        2020-05-07  12:08 PM           2452 unittests.c
```