Assignment - Base Converter

Software Project (0368-2161) Due: 23/04/2023 23:59

1 Introduction

The purpose of this assignment is to get familiar with basic coding in C language.

2 Assignment Description

In this assignment you will write your first C program. The program receives a **positive integer** number in base a and converts it to base b. Below an example running of the program:

```
enter the source base:
16
enter the target base:
10
enter a number in base 16:
a4
The number in base 10 is: 164
```

2.1 Requirements

1.

Input Variable	Valid Values	Error Message
source base	$\in [2, 3, \ldots, 16]$	"Invalid source base!"
target base	$\in [2, 3, \ldots, 16]$	"Invalid target base!"
input number	lower case letters and numbers [1]	"Invalid input number!"

[1] Depends in the source base.

2. Implement the above program in a file named `id1_id2_bc.c` (id1 and id2 are the ids of the partners).
3. You can't use arrays.
4. The user's input at any stage ends by pressing the Enter key.
5. You can use: *stdlib.h, stdio.h, math.h*

2.2 Compile and Running

1. The program must compile cleanly (no errors/warnings) when running the following command:

```
gcc -ansi -Wall -Wextra -Werror -pedantic-errors id1_id2_bc.c
```

2. Please note, if you use the ***math.h*** library, you have to add the *-lm* flag to the compilation command.

3 Submission

1. In Moodle, submit only the id1_id2_bc.c file.
2. For any question regarding the assignment, please post at the HW_0 discussion forum.

4 Reference

Below is a reference program that converts numbers from binary to decimal only. You can use it and generalize it to other bases as required. You can test yourself using this link.

```c
#include <stdio.h>
#include <math.h>

int i = 0;
int sum = 0;

void reverse(void)
{
    char c;
    if((c = getchar()) != '\n'){
        reverse();
        sum += (c -'0')*pow(2,i);
        i++;
    }
    return;
}

int main(void)
{
    printf("Enter a Binary number:\n");
    reverse();
    printf("The Decimal is: %d\n",sum);
    return ;
}
```