## Exercise 0

```
[ksrivast@id415m11 ~]$ cd Desktop/CS2263/Labs
[ksrivast@id415m11 Labs]$ cd Lab3
[ksrivast@id415m11 Lab3]$ git clone https://vcs.cs.unb.ca/git/cs2263-ksrivast
Cloning into 'cs2263-ksrivast'...
Username for 'https://vcs.cs.unb.ca': ksrivast
Password for 'https://ksrivast@vcs.cs.unb.ca':
warning: You appear to have cloned an empty repository.
[ksrivast@id415m11 Lab3]$ cd CS2263-ksrivast
CS2263-ksrivast: No such file or directory.
[ksrivast@id415m11 Lab3]$ cd cs2263-ksrivast
[ksrivast@id415m11 cs2263-ksrivast]$ █
```

## Exercise 1

arithmetic1.c

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

int main(int argc, char * * argv)
{
    int arr1[] = {7, 2, 5, 3, 1, 6, -8, 16, 4};
    char arr2[] = {'m', 'q', 'k', 'z', '%', '>'};
    double arr3[] = {3.14, -2.718, 6.626, 0.529};

    int len1 = sizeof(arr1);  //sizeof(int);
    int len2 = sizeof(arr2);  //sizeof(char);
    int len3 = sizeof(arr3);  //sizeof(double);

    printf("lengths = %d, %d, %d\n", len1, len2, len3);

    int *iptr = arr1;
    char *cptr = arr2;
    double *dptr = arr3;

    printf("values = %d, %c, %f\n", *iptr, *cptr, *dptr);
    printf("hex notation= %p, %p, %p\n", iptr, cptr, dptr);
    printf("\n");

    iptr++;
    cptr++;
    dptr++;

    printf("values = %d, %c, %f\n", *iptr, *cptr, *dptr);
```

```c
    printf("hex notation= %p, %p, %p\n", iptr, cptr, dptr);
    printf("\n");

    iptr++;
    cptr++;
    dptr++;

    printf("values = %d, %c, %f\n", *iptr, *cptr, *dptr);
    printf("hex notation= %p, %p, %p\n", iptr, cptr, dptr);
    printf("\n");

    iptr++;
    cptr++;
    dptr++;

    printf("values = %d, %c, %f\n", *iptr, *cptr, *dptr);
    printf("hex notation= %p, %p, %p\n", iptr, cptr, dptr);

    return EXIT_SUCCESS;
}
```

Output:

```
C:\Users\srivk\OneDrive\Desktop\UNB\Summer2020\CS2263\Labs\Lab3>gcc arithmetic1.c -o test

C:\Users\srivk\OneDrive\Desktop\UNB\Summer2020\CS2263\Labs\Lab3>test
lengths = 36, 6, 32
values = 7, m, 3.140000
hex notation= 0061FEE4, 0061FEDE, 0061FEB8

values = 2, q, -2.718000
hex notation= 0061FEE8, 0061FEDF, 0061FEC0

values = 5, k, 6.626000
hex notation= 0061FEEC, 0061FEE0, 0061FEC8

values = 3, z, 0.529000
hex notation= 0061FEF0, 0061FEE1, 0061FED0
```

1.
2. No, they are not the same because each pointer is a different data type.

## Exercise 2

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

int main()
{
    int arr[] = {10, 11, 12, 13, 14, 15, 16};

    int i;
    int *ptr = arr;

    for(i = 0; i < sizeof(arr)/sizeof(arr[0]); i++)
    {
        printf("%d", i);
        printf("\t\t");
        printf("%d", arr[i]);
        printf("\t\t");
        printf("%d%p", arr[i]);
        printf("\t\t");
        printf("%d", *ptr++);
        printf("\n");
        printf("\n");
    }
}
```

Output:

```
C:\Users\srivk\OneDrive\Desktop\UNB\Summer2020\CS2263\Labs\Lab3>gcc exerciseTwo.c -o test

C:\Users\srivk\OneDrive\Desktop\UNB\Summer2020\CS2263\Labs\Lab3>test
0           10              100061FF08          10

1           11              110061FF08          11

2           12              120061FF08          12

3           13              130061FF08          13

4           14              140061FF08          14

5           15              150061FF08          15

6           16              160061FF08          16
```

```
[ksrivast@id415m11 Lab3]$ git add exerciseTwo.c
[ksrivast@id415m11 Lab3]$ git commit -m "exercise two lab3"
[master (root-commit) 6f7e080] exercise two lab3
 Committer: Kartik Srivastava <ksrivast@id415m11.cs.unb.ca>
Your name and email address were configured automatically based
on your username and hostname. Please check that they are accurate.
You can suppress this message by setting them explicitly:

    git config --global user.name "Your Name"
    git config --global user.email you@example.com

After doing this, you may fix the identity used for this commit with:

    git commit --amend --reset-author

 2 files changed, 71 insertions(+)
 create mode 100644 arithmetic1.c
 create mode 100644 exerciseTwo.c
```

Pushing values to git was extremely confusing for me and I think this is incorrect too.


**Exercise 4**

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

int main(int argc, int * * argv)
{
    int x = -2;
    int arr[] = {0, 1, 2, 3, 4};
    int y = 15;

    printf("& x       = %p, & y       = %p\n", &x, &y);
    printf("& arr[0] = %p, arr[4] = %p\n", &arr[0], &arr[4]);
    printf("x = %d, y = %d\n", x, y);
    printf("Memory address of x: %p", &x);
    printf("\n");
    printf("Memory address of y: %p", &y);
    printf("\n");

    arr[-1] = 7;
    arr[5] = -23;

    printf("\n");
    printf("x = %d, y = %d\n", x, y);
    printf("Memory address of x: %p", &x);
    printf("\n");
    printf("Memory address of y: %p", &y);
```

```c
    printf("\n");

    arr[6] = 108;

    printf("\n");
    printf("x = %d, y = %d\n", x, y);
    printf("Memory address of x: %p", &x);
    printf("\n");
    printf("Memory address of y: %p", &y);
    printf("\n");


    arr[7] = -353;

    printf("\n");
    printf("x = %d, y = %d\n", x, y);
    printf("Memory address of x: %p", &x);
    printf("\n");
    printf("Memory address of y: %p", &y);
    printf("\n");
    printf("\n");

    int i;
    for(i = 0; i < 5; i++)
    {
        printf("The memory address is: %d%p", arr[i]);
        printf("\n");
    }

    return EXIT_SUCCESS;
}
```

Output:

```
C:\Users\srivk\OneDrive\Desktop\UNB\Summer2020\CS2263\Labs\Lab3>gcc wrongindex.c -o test

C:\Users\srivk\OneDrive\Desktop\UNB\Summer2020\CS2263\Labs\Lab3>test
& x      = 0061FF18, & y      = 0061FF00
& arr[0] = 0061FF04, arr[4] = 0061FF14
x = -2, y = 15
Memory address of x: 0061FF18
Memory address of y: 0061FF00

x = -23, y = 7
Memory address of x: 0061FF18
Memory address of y: 0061FF00

x = -23, y = 7
Memory address of x: 0061FF18
Memory address of y: 0061FF00

x = -23, y = 7
Memory address of x: 0061FF18
Memory address of y: 0061FF00

The memory address is: 000000007
The memory address is: 100000007
The memory address is: 200000007
The memory address is: 300000007
The memory address is: 400000007
```

```
[ksrivast@id415m11 Lab3]$ git add wrongindex.c
[ksrivast@id415m11 Lab3]$ git commit -m "wrongindex lab3"
[master 0d6cb68] wrongindex lab3
 Committer: Kartik Srivastava <ksrivast@id415m11.cs.unb.ca>
Your name and email address were configured automatically based
on your username and hostname. Please check that they are accurate.
You can suppress this message by setting them explicitly:

    git config --global user.name "Your Name"
    git config --global user.email you@example.com

After doing this, you may fix the identity used for this commit with:

    git commit --amend --reset-author

 1 file changed, 56 insertions(+)
 create mode 100644 wrongindex.c
[ksrivast@id415m11 Lab3]$ git log
commit 0d6cb681706a4714080793cf20bda9b877e69105
Author: Kartik Srivastava <ksrivast@id415m11.cs.unb.ca>
Date:   Tue May 19 23:41:10 2020 -0300

    wrongindex lab3
```

```
[ksrivast@id415m11 Lab3]$ rm wrongindex.c
[ksrivast@id415m11 Lab3]$ git checkout -- wrongindex.c
```