

Daniyal Khan

3765942

CS-2263

Assignment #1

Exercise 1:

```
#include <stdio.h>

#include <stdlib.h>

void printArray (char array[], int length);

int main (int argc, char ** argv) {
    char array[] = {'H','e','l','l','o',' ','W','o','r','l','d','!'};
    int length = sizeof(array);
    printArray(array, length);
    putchar('\n');
    return 0;
}

void printArray (char array[], int length) {
    for (int i = 0; i < length; i++) {
        putchar(array[i]);
    }
}
```

The image shows a terminal window titled "assignments/A1 (-zsh)". It displays two test runs. The first run shows the command `~/0/CS-XXXX/CS2263/Assignments/A1 main !5 ?2` being executed, which runs `./a.out` and outputs "Hello World!". The second run shows the same command being executed again. Both runs are marked with a green checkmark and a timestamp of 05:31:26 PM and 05:31:32 PM respectively. A green cursor is visible on the line following the second test run.

```
~/0/CS-XXXX/CS2263/Assignments/A1 main !5 ?2 ✓ 05:31:26 PM  
./a.out  
Hello World!  
~/0/CS-XXXX/CS2263/Assignments/A1 main !5 ?2 ✓ 05:31:32 PM  
█
```

Exercise 2:

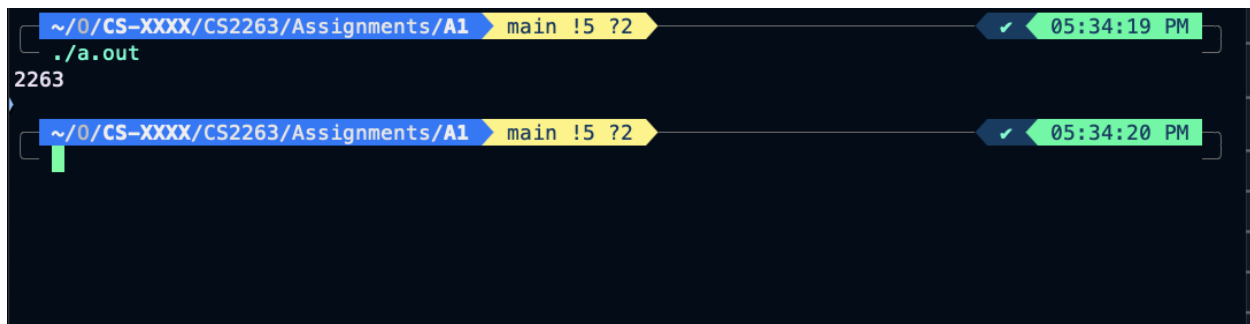
```
#include <stdio.h>

#include <stdlib.h>

void printEachNumber(unsigned int x);

int main (int argc, char ** argv) {
    unsigned int x = 2263;
    printEachNumber(x);
    putchar('\n');
    return EXIT_SUCCESS;
}

void printEachNumber(unsigned int x) {
    if (x == 0) {
        return;
    }
    int r = x % 10;
    printEachNumber(x/10);
    putchar(r + '0'); // Convert digit to char
}
```



Exercise 3:

```
#include <stdio.h>

#include <stdlib.h>

#include <string.h>

void printArray(char prompt[], int length);

void printEachNumber(unsigned int x);

void convertToDecimal(char binaryArr[], int length);

int main (int argc, char ** argv) {
    char prompt[] = {
        'E','n','t','e','r',' ','a','
', 'b','i','n','a','r','y',' ','
', 't','o',' ','b','e','
', 'c','o','n','v','e','r','t','e','d',' ','
', 't','o',' ','d','e','c','i','m','a','l',':'
    };
    int promptLength = sizeof(prompt);
    printArray(prompt, promptLength);
}
```

```

    int i = 0;
    int ch;
    char binaryArr[32];
    while ((ch = getchar()) != '\n' && i < 31) {
        binaryArr[i] = ch;
        i++;
    }

    convertToDecimal(binaryArr, i);

    putchar('\n');
    return EXIT_SUCCESS;
}

void convertToDecimal(char binaryArr[], int length) {
    unsigned int result = 0;
    for (int i = 0; i < length; i++) {
        result = result * 2 + (binaryArr[i] - '0');
    }
    printEachNumber(result);
}

void printArray (char array[], int length) {
    for (int i = 0; i < length; i++) {
        putchar(array[i]);
    }
}

```

```
}
```

```
void printEachNumber(unsigned int x) {  
    if (x == 0) {  
        return;  
    }  
    int r = x % 10;  
    printEachNumber(x/10);  
    putchar(r + '0'); // Convert digit to char  
}
```

```
~/0/CS-XXXX/CS2263/Assignments/A1 ..ssignments/A1 (-zsh)  
main !5 ?2 ✓ 05:39:54 PM  
gcc -g Exercise3.c  
main !5 ?2 ✓ 05:39:55 PM  
./a.out  
Enter a binary to be converted to decimal:11  
3  
main !5 ?2 ✓ 4s 05:40:01 PM  
./a.out  
Enter a binary to be converted to decimal:11000  
24  
main !5 ?2 ✓ 05:40:07 PM
```