

CS 2263

Assignment #1

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#3742233

Exercise 1

```
/**
 * @author Saheb Singh Arora
 * Student id 3742233
 */

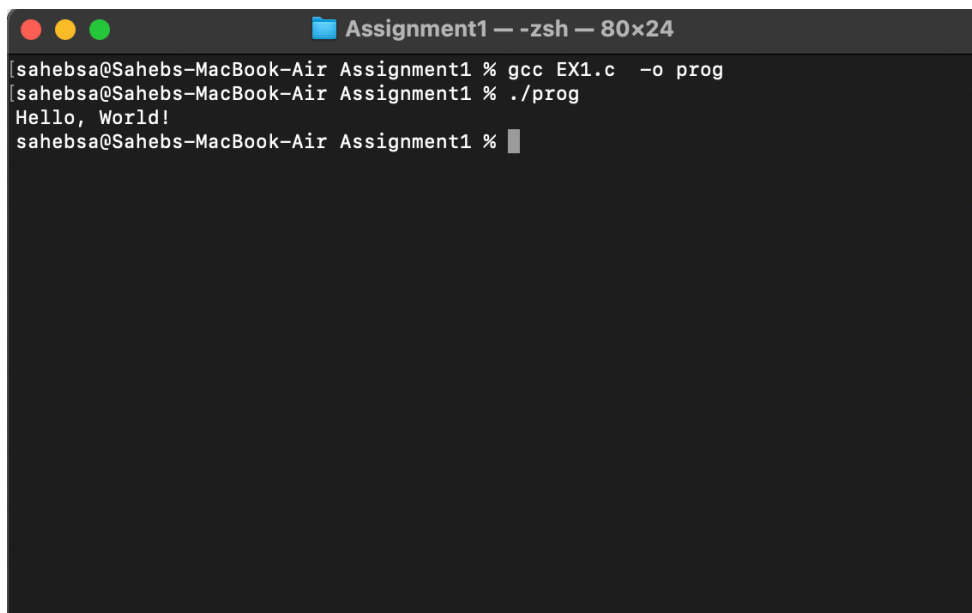
#include <stdio.h>
#include <stdlib.h>

void printArr(char a[], int n) {
    for (int i = 0; i < n; i++) {
        putchar(a[i]);
    }
}

int main() {
    char hello[] = "Hello, World!\n";
    int length = sizeof(hello) / sizeof(hello[0]);

    printArr(hello, length);

    return EXIT_SUCCESS;
}
```

A screenshot of a terminal window titled "Assignment1 - zsh - 80x24". The terminal shows the user "sahebsa" on a "Sahebs-MacBook-Air" machine. The user enters the command "gcc EX1.c -o prog" to compile the program, followed by "./prog" to run it. The output of the program is "Hello, World!". The prompt returns to the user, and a cursor is visible at the end of the line.

```
sahebsa@Sahebs-MacBook-Air Assignment1 % gcc EX1.c -o prog
sahebsa@Sahebs-MacBook-Air Assignment1 % ./prog
Hello, World!
sahebsa@Sahebs-MacBook-Air Assignment1 %
```

Exercise 2

```
/**
 * @author Saheb Singh Arora
 * Student id 3742233
 */
#include <stdio.h>
#include <stdlib.h>

void printReversed(unsigned int n) {
    if (n == 0) {
        putchar('0');
        return;
    }

    while (n > 0) {
        int digit = n % 10;
        putchar('0' + digit);
        n /= 10;
    }
}

int main() {
    unsigned int number = 2263;

    printf("Original number: %u\n", number);
    printf("Reversed number: ");
    printReversed(number);
    printf("\n");

    return EXIT_SUCCESS;
}
```

```
Assignment1 — -zsh — 80x24
[sahebsa@Sahebs-MacBook-Air Assignment1 % gcc EX2.c -o prog
[sahebsa@Sahebs-MacBook-Air Assignment1 % ./prog
Original number: 2263
Reversed number: 3622
sahebsa@Sahebs-MacBook-Air Assignment1 %
```

Exercise 3

```
/**
 * @author Saheb Singh Arora
 * Student id 3742233
 */
#include <stdio.h>
#include <stdlib.h>

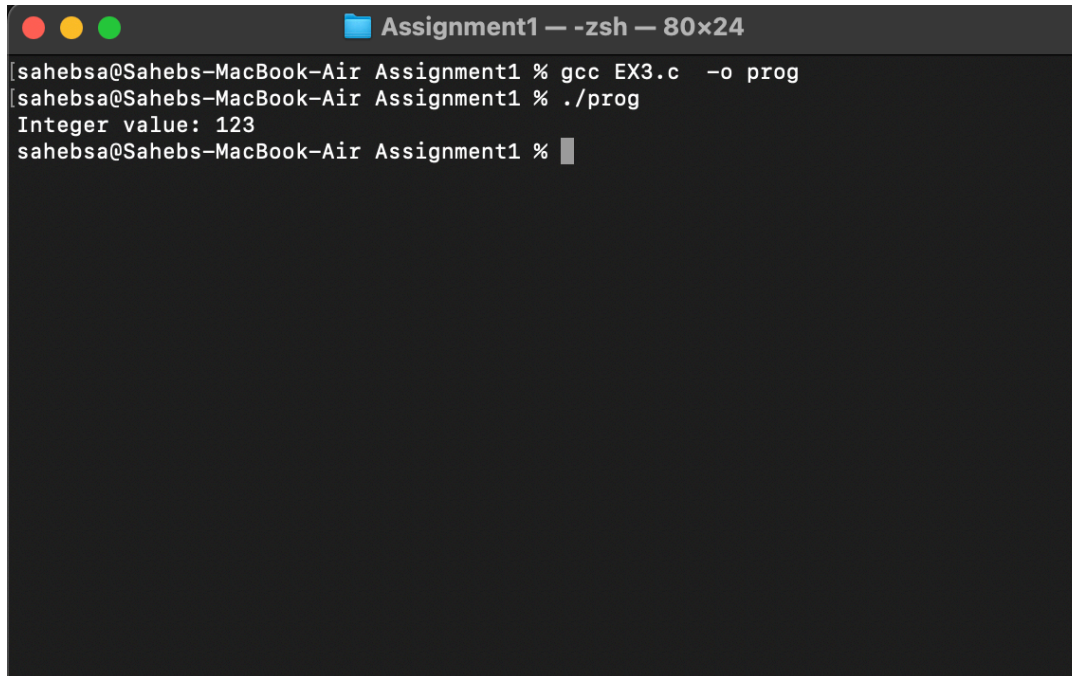
int convertInt(char a[], int n) {
    int result = 0;
    int multiplier = 1;

    for (int i = 0; i < n; i++) {
        result += (a[i] - '0') * multiplier;
        multiplier *= 10;
    }

    return result;
}

int main() {
    char digits[] = {'3', '2', '1'};
    int numDigits = sizeof(digits) / sizeof(digits[0]);
```

```
    int result = convertInt(digits, numDigits);  
    printf("Integer value: %d\n", result);  
  
    return EXIT_SUCCESS;  
}
```



A terminal window titled "Assignment1 — -zsh — 80x24" is shown. The prompt is "sahebsa@Sahebs-MacBook-Air Assignment1 %". The user enters "gcc EX3.c -o prog" and the prompt returns. The user then enters "./prog" and the prompt returns. The output of the program is "Integer value: 123". The prompt returns again.

```
Assignment1 — -zsh — 80x24  
[sahebsa@Sahebs-MacBook-Air Assignment1 % gcc EX3.c -o prog  
[sahebsa@Sahebs-MacBook-Air Assignment1 % ./prog  
Integer value: 123  
sahebsa@Sahebs-MacBook-Air Assignment1 %
```

Exercise 4

```
/**
@author Saheb Singh Arora
Student id 3742233
*/
#include <stdio.h>
#include <stdlib.h>

int convertInt(char a[], int n) {
    int result = 0;
    int multiplier = 1;

    for (int i = 0; i < n; i++) {
        result += (a[i] - '0') * multiplier;
        multiplier *= 10;
    }

    return result;
}

int addReversedInt(char a[], int n, char b[], int m) {
    int num1 = convertInt(a, n);
    int num2 = convertInt(b, m);
    return num1 + num2;
}

int main() {
    char num1[] = {'3', '2', '1'};
    char num2[] = {'6', '5', '4'};
    int numDigits1 = sizeof(num1) / sizeof(num1[0]);
    int numDigits2 = sizeof(num2) / sizeof(num2[0]);

    int result = addReversedInt(num1, numDigits1, num2,
numDigits2);
    printf("Sum: %d\n", result);

    return EXIT_SUCCESS;
}
```

```
Assignment1 — -zsh — 80x24
[sahebsa@Sahebs-MacBook-Air Assignment1 % gcc EX4.c -o prog
[sahebsa@Sahebs-MacBook-Air Assignment1 % ./prog
Sum: 579
sahebsa@Sahebs-MacBook-Air Assignment1 %
```

Exercise 5

```
/**
 * @author Saheb Singh Arora
 * Student id 3742233
 */
#include <stdio.h>
#include <stdlib.h>

void printArr(char a[], int n) {
    for (int i = n - 1; i >= 0; i--) {
        putchar(a[i]);
    }
}

void reverseArr(char a[], int n) {
    for (int i = 0; i < n / 2; i++) {
        char temp = a[i];
        a[i] = a[n - i - 1];
        a[n - i - 1] = temp;
    }
}
```

```

int convertInt(char a[], int n) {
    int result = 0;
    int multiplier = 1;

    for (int i = 0; i < n; i++) {
        result += (a[i] - '0') * multiplier;
        multiplier *= 10;
    }

    return result;
}

int addReversedInt(char a[], int n, char b[], int m) {
    int num1 = convertInt(a, n);
    int num2 = convertInt(b, m);
    return num1 + num2;
}

int main() {
    char num1[11], num2[11];
    int i = 0, j = 0;

    printf("Enter the first number (reversed): ");
    while ((num1[i++] = getchar()) != '\n');
    num1[i - 1] = '\0';

    printf("Enter the second number (reversed): ");
    while ((num2[j++] = getchar()) != '\n');
    num2[j - 1] = '\0';

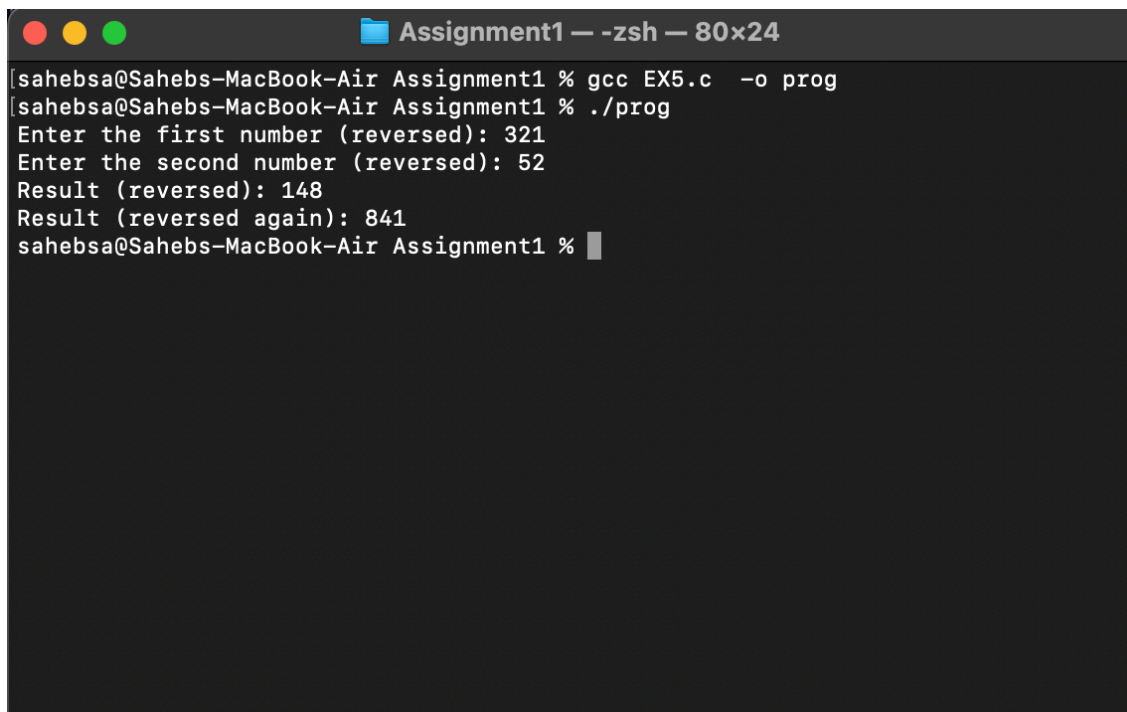
    int sum = addReversedInt(num1, i - 1, num2, j - 1);

    printf("Result (reversed): ");
    char resultStr[11];
    int k = 0;
    while (sum != 0) {
        resultStr[k++] = (sum % 10) + '0';
        sum /= 10;
    }
}

```



```
    resultStr[k] = '\\0';  
    printArr(resultStr, k);  
    printf("\\n");  
  
    printf("Result (reversed again): ");  
    reverseArr(resultStr, k);  
    printArr(resultStr, k);  
    printf("\\n");  
  
    return EXIT_SUCCESS;  
}
```



A terminal window titled "Assignment1 - zsh - 80x24" is shown. The window contains the following text:

```
[sahebsa@Sahebs-MacBook-Air Assignment1 % gcc EX5.c -o prog  
[sahebsa@Sahebs-MacBook-Air Assignment1 % ./prog  
Enter the first number (reversed): 321  
Enter the second number (reversed): 52  
Result (reversed): 148  
Result (reversed again): 841  
sahebsa@Sahebs-MacBook-Air Assignment1 %
```