

# **Lab: 1**

## **Introduction/ Refresher for C Language**

Due Date: January 7, 2021

Lab Session: Virtual/ Remote (A3, 16603)

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## Exercise 1 Result/ Simulation:

```
main.c
1  /*
2   * exercise_1.c
3   *
4   * Created on: Jan 6, 2021
5   * Author: Adrian Gomez
6   * SID: 20119988
7   * EECS 114
8   */
9
10 #include <stdio.h>
11
12 int main (){
13     printf("hello, world");
14     return 0;
15 }
```

hello, world

...Program finished with exit code 0  
Press ENTER to exit console.

## Exercise 3(If/Else) Result/ Simulation:

```
main.c
1  /*
2   * exercise3_if.c
3   *
4   * Created on: Jan 6, 2021
5   * Author: Adrian Gomez
6   * SID: 20119988
7   * EECS 114
8   */
9
10 #include <stdio.h>
11
12 int main(){
13     int num;
14     printf("Enter an integer:");
15     scanf("%d", &num);
16     if(num%2 == 0){
17         printf("%d is an even integer.", num);
18     }
19     else{
20         printf("%d is an odd number.", num);
21     }
22     return 0;
23 }
24
```

Enter an integer:5  
5 is an odd number.

...Program finished with exit code 0  
Press ENTER to exit console.

## Exercise 3(For Loop) Result/ Simulation:

```
main.c
1  /*
2   * exercise3_forLoop.c
3   *
4   * Created on: Jan 6, 2021
5   * Author: Adrian Gomez
6   */
7
8  #include <stdio.h>
9
10 int main (){
11     int num = 0, count = 0, sum = 0;
12     printf("Enter a positive integer: ");
13     scanf("%d", &num);
14
15     for (count = 1; count <= num; ++count){
16         sum += count;
17     }
18     printf("Sum = %d", sum);
19     return 0;
20 }
21
```

Enter a positive integer: 5  
Sum = 15

...Program finished with exit code 0  
Press ENTER to exit console.

## Exercise 3(While) Result/ Simulation:

```
main.c
1  /*
2   * exercise3_while.c
3   *
4   * Created on: Jan 6, 2021
5   * Author: signa
6   */
7  #include <stdio.h>
8
9  int main(){
10     int num;
11     long long factorial;
12
13     printf("Enter an integer: ");
14     scanf("%d", &num);
15
16     factorial = 1;
17     while (num > 0){
18         factorial *= num;
19         --num;
20     }
21     printf("Factorial= %lld", factorial);
22     return 0;
23 }
24
```

Enter an integer: 6  
Factorial= 720

...Program finished with exit code 0  
Press ENTER to exit console.

## Exercise 3(Do-While) Result/ Simulation:

```
main.c
1  /*
2   * exercise3_do_while.c
3   *
4   * Created on: Jan 6, 2021
5   * Author: Adrian Gomez
6   */
7
8  #include <stdio.h>
9
10
11 int main(){
12     double number, sum =0;
13     do{
14         printf("Enter a number: ");
15         scanf("%lf", &number);
16         sum += number;
17     }while(number != 0.0);
18
19     printf("Sum = %.2lf", sum);
20     return 0;
21 }
22
```

Enter a number: 4  
Enter a number: 4  
Enter a number: 0  
Sum = 8.00

...Program finished with exit code 0  
Press ENTER to exit console.

## Exercise 4(a) Result/ Simulation:

```
main.c
1  #include <stdio.h>
2  int main(){
3      int var = 5;
4      printf("Value: %d\n", var);
5      printf("Address: %u", &var);
6      return 0;}
7

main.c:5:23: warning: format '%u' expects argument of type 'unsigned int', but no argument was given [-Wformat]
Value: 5
Address: 517777228

...Program finished with exit code 0
Press ENTER to exit console.
```

## Exercise 4(b) Result/ Simulation:

```
main.c
1  #include <stdio.h>
2  int main(){
3      int* pc, c;
4
5      c = 22;
6      printf("Address of c: %u\n", &c);
7      printf("Value of c: %d\n\n", c);
8
9      pc = &c;
10     printf("Address of pointer pc: %u\n", pc);
11     printf("Content of pointer pc: %d\n\n", *pc);
12
13     c = 11;
14     printf("Address of pointer pc: %u\n", pc);
15     printf("Content of pointer pc: %d\n\n", *pc);
16
17     *pc = 2;
18     printf("Address of c: %u\n", &c);
19     printf("Value of c: %d\n\n", c);
20
21     return 0;
22 }
23
24
```

main.c:6:28: warning: format '%u' expects argument of type 'unsigned int', but argument 2 has type 'int' [-Wformat]
main.c:10:37: warning: format '%u' expects argument of type 'unsigned int', but argument 2 has type 'int' [-Wformat]
main.c:14:37: warning: format '%u' expects argument of type 'unsigned int', but argument 2 has type 'int' [-Wformat]
main.c:18:28: warning: format '%u' expects argument of type 'unsigned int', but argument 2 has type 'int' [-Wformat]

Address of c: 1667610340
Value of c: 22

Address of pointer pc: 1667610340
Content of pointer pc: 22

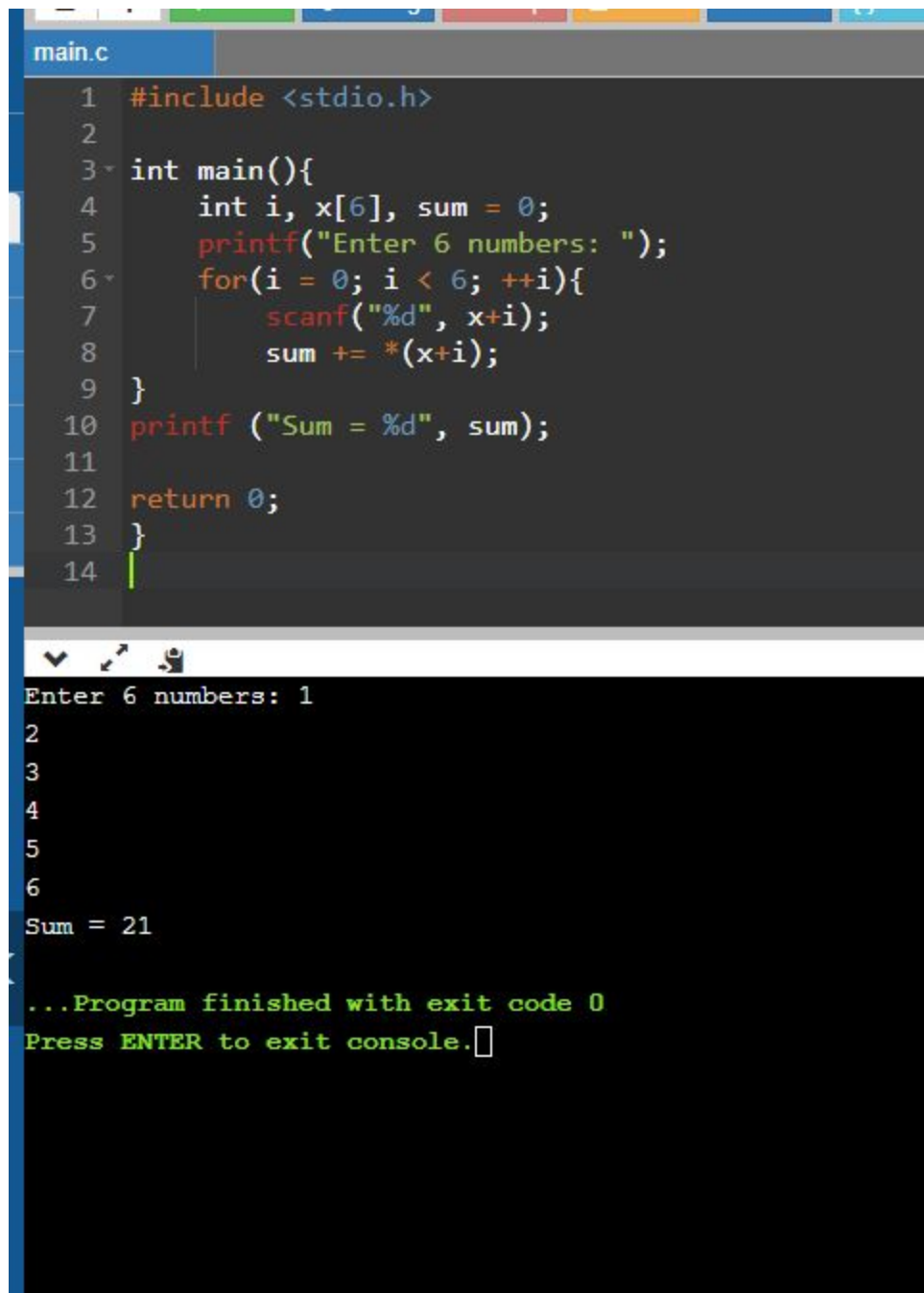
Address of pointer pc: 1667610340
Content of pointer pc: 11

Address of c: 1667610340
Value of c: 2

...Program finished with exit code 0
Press ENTER to exit console.



## Exercise 4(c) Result/ Simulation:



The image shows a screenshot of a C program being simulated. The top part displays the source code in a dark-themed editor with line numbers 1 through 14. The code includes `<stdio.h>`, defines a `main` function, declares an array `x` of size 6 and a variable `sum` initialized to 0, prompts the user to enter 6 numbers, reads them into the array, calculates their sum, and prints the result. The bottom part shows the program's execution in a console window. It displays the prompt "Enter 6 numbers:", followed by six lines of input (1 through 6), the output "Sum = 21", and a message indicating the program finished with exit code 0, prompting the user to press ENTER to exit the console.

```
main.c
1  #include <stdio.h>
2
3  int main(){
4      int i, x[6], sum = 0;
5      printf("Enter 6 numbers: ");
6      for(i = 0; i < 6; ++i){
7          scanf("%d", x+i);
8          sum += *(x+i);
9      }
10     printf ("Sum = %d", sum);
11
12     return 0;
13 }
14
```

Enter 6 numbers: 1  
2  
3  
4  
5  
6  
Sum = 21  
...Program finished with exit code 0  
Press ENTER to exit console. □

## Exercise 4(d) Result/ Simulation:

```
main.c
1  #include <stdio.h>
2  int main(){
3      int x[5] = {1, 2, 3, 4, 5};
4      int* ptr;
5      ptr = &x[2];
6      printf("*ptr = %d \n", *ptr);
7      printf("*ptr+1 = %d \n", *ptr+1);
8      printf("*ptr-1 = %d", *ptr-1);
9      return 0;
10
11 }
```

▼ ↗ 🐞

```
*ptr = 3
*ptr+1 = 4
*ptr-1 = 2

...Program finished with exit code 0
Press ENTER to exit console.□
```

## Exercise 4(e) Result/ Simulation:

```
main.c
1  #include <stdio.h>
2  void swap(int *n1, int *n2);
3  int main(){
4      int num1 = 5, num2 = 10;
5      swap(&num1, &num2);
6      printf("num1 = %d\n", num1);
7      printf("num2 = %d", num2);
8      return 0;
9
10 }
11 void
12 swap(int* n1, int* n2){
13     int temp;
14     temp = *n1;
15     *n1 = *n2;
16     *n2 = temp;
17
18 }
```

num1 = 10  
num2 = 5

...Program finished with exit code 0  
Press ENTER to exit console.