

LAB #7 Solution
(Relevant Lecture: #14 & #15)

1. There are compilation errors in the following program. Correct the errors and run the program.

```
#include <stdio.h>
float average_2(int num1, int num2)
void main(void)
{
    int n1;
    int n2;
    float avg_num;
    printf("Enter two integers:\n");
    scanf_s("%d%d", &n1, &n2);

    avg_num = average_2(n1, n2);
    printf("The average is %f\n", local_average);
}

float average_2(int num1, int num2);
{
    float local_average;
    local_average = (n1 + n2)/2.0;
    return local_average;
}
```

Solution (there are 4 errors):

```
_#include <stdio.h>
float average_2(int num1, int num2); /*; should be add to the prototype statement*/
void main(void)
{
    int n1;
    int n2;
    float avg_num;
    printf("Enter two integers:\n");
    scanf_s("%d%d", &n1, &n2);

    avg_num = average_2(n1, n2);
    printf("The average is %f\n", local_average);
/*compilation error: this line tries to access a local variable defined in average_2(); change to
avg_num */
}

float average_2(int num1, int num2); /*no ; in the function header*/
{
    float local_average;
```

```
    local_average = (n1+n2)/2.0;
    /*compilation error: this line tries to access local variables defined in main(); change n1 to
    num1, n2 to num2 */

    return local_average;
}
```

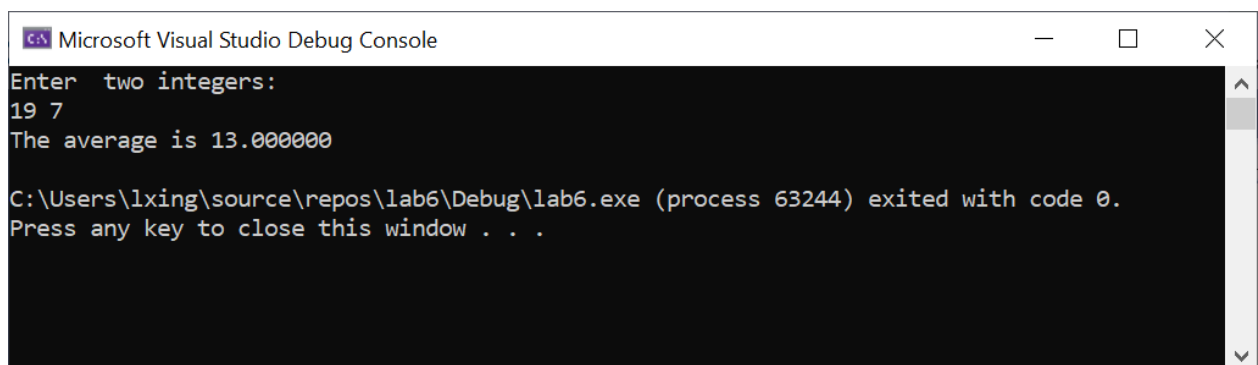
Correct Program:

```
#include <stdio.h>
float average_2(int num1, int num2);
void main(void)
{
    int n1;
    int n2;
    float avg_num;
    printf("Enter two integers:\n");
    scanf_s("%d%d", &n1, &n2);

    avg_num = average_2(n1, n2);
    printf("The average is %f\n", avg_num);
}

float average_2(int num1, int num2)
{
    float local_average;
    local_average = (num1 + num2)/2.0;
    return local_average;
}
```

Testing:



The screenshot shows a window titled "Microsoft Visual Studio Debug Console". The output text is as follows:

```
Enter two integers:
19 7
The average is 13.000000

C:\Users\lxing\source\repos\lab6\Debug\lab6.exe (process 63244) exited with code 0.
Press any key to close this window . . .
```

2. **(Modifying exercise for Lab #5 Problem #4)** The program below reads 2 integer numbers from the keyboard and adds the two numbers. If the sum of the two numbers is an even number, it outputs “The sum is an even number”. If the sum of the two numbers is an odd number, it outputs “The sum is an odd number”. Modify the program according to the following requirement: **Instead of doing the addition and parity checking in the main() function (highlighted in yellow), do both in a function called ParityCheck you need to define.**

```
#include <stdio.h>
void main(void)
{
    int a;
    int b;
    int sum;
    a = 0;
    b = 0;
    sum = 0;

    printf("Please input two integer numbers:\n");
    scanf_s("%d%d", &a, &b);

    sum = a+b;
    if ((sum % 2) == 0)
        printf("The sum is an even number");
    else
        printf("The sum is an odd number");
}
```

Example Solution:

```
#include <stdio.h>

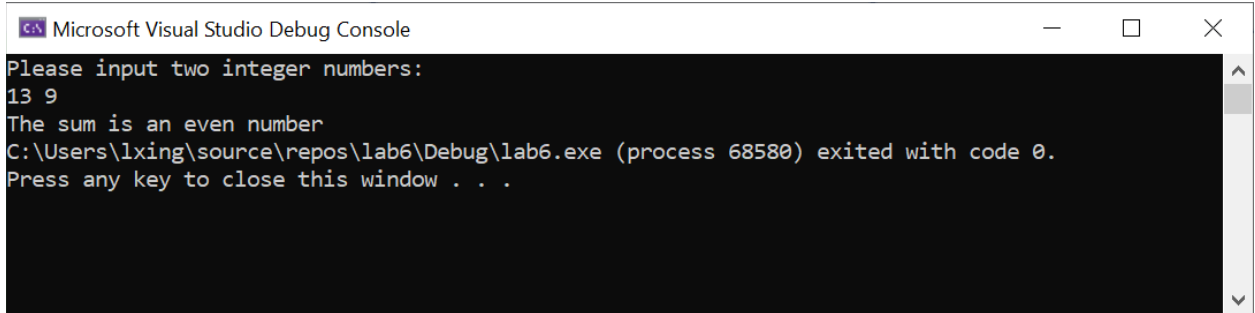
/*function declaration*/
void ParityCheck(int m, int n);

void main(void)
{
    int a;
    int b;
    a = 0;
    b = 0;

    printf("Please input two integer numbers:\n");
    scanf_s("%d%d", &a, &b);
    ParityCheck(a, b); /*function call*/
}

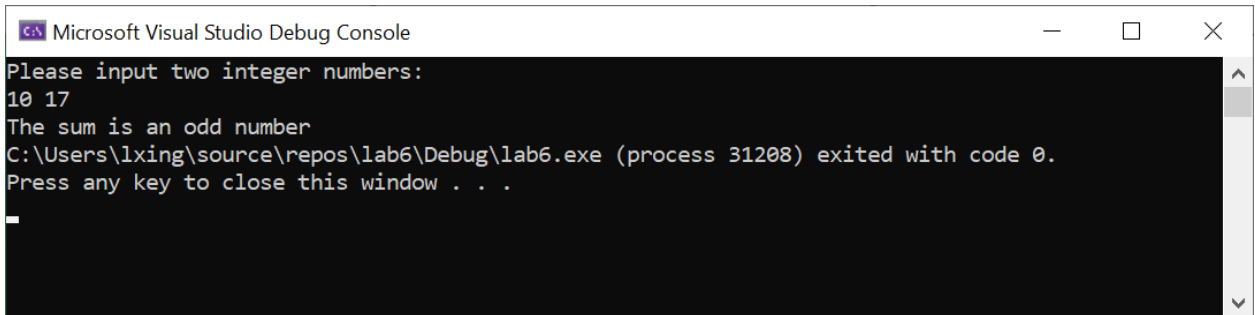
/*function definition*/
void ParityCheck(int m, int n)
{
    int sum = 0;
    sum = m + n;
    if ((sum % 2) == 0)
        printf("The sum is an even number");
    else
        printf("The sum is an odd number");
}
```

Testing using 13, 9:



```
Microsoft Visual Studio Debug Console
Please input two integer numbers:
13 9
The sum is an even number
C:\Users\lxing\source\repos\lab6\Debug\lab6.exe (process 68580) exited with code 0.
Press any key to close this window . . .
```

Testing using 10, 17:



```
Microsoft Visual Studio Debug Console
Please input two integer numbers:
10 17
The sum is an odd number
C:\Users\lxing\source\repos\lab6\Debug\lab6.exe (process 31208) exited with code 0.
Press any key to close this window . . .
-
```

3. After reading the above information, debug and run the following program (hint: there are 8 errors in the program, some line may contain more than one error):

```
/* A debugging example*/
#include <stdio.h>;
void main(void);
(
    printf('DEBUGGING EXAMPLE:\n');
    printf("This is an example of debugging. By following the step-by-step procedure ")
    printf("that we describe in this application example, you will begin to develop the ");
    printf("skills you need for successful and efficient debugging.");
}
```

Solution:

```
/* A debugging example*/
#include <stdio.h>;
→errors 1&2: #include <stdio.h> (wrong location for < and no ;)

void main(void);
→error 3: remove ;

(
→ error 4: need brace { not parenthesis!

    printf('DEBUGGING EXAMPLE:\n');
→ error 5: double quotes " " instead of single quotes ' ' should be used

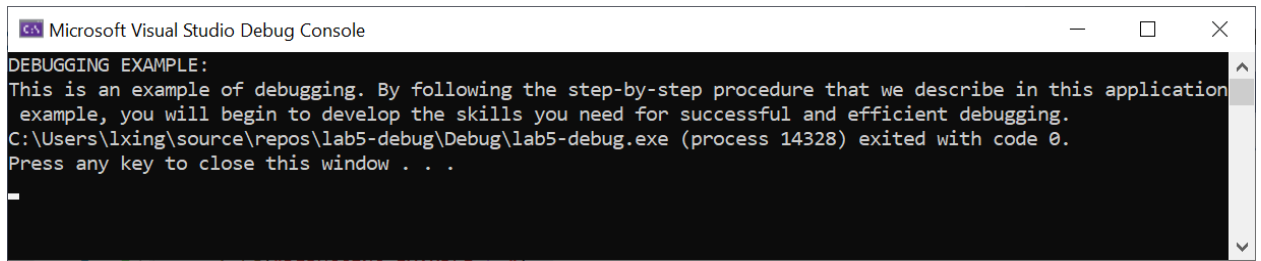
    printf("This is an example of debugging. By following the step-by-step procedure ")
→ error 6: ; should be added to the end of the statement

    printf("that we describe in this application example, you will begin to develop the ");
→ error 7: the closing double quote " is missing before )

    printf("skills you need for successful and efficient debugging.");
→ error 8: need () not braces {}
}
```

The program after correcting errors:

```
/* A debugging example*/
#include <stdio.h>
void main(void)
{
    printf("DEBUGGING EXAMPLE:\n");
    printf("This is an example of debugging. By following the step-by-step
procedure ");
    printf("that we describe in this application example, you will begin to
develop the ");
    printf("skills you need for successful and efficient debugging." );
}
```



```
Microsoft Visual Studio Debug Console
DEBUGGING EXAMPLE:
This is an example of debugging. By following the step-by-step procedure that we describe in this application
example, you will begin to develop the skills you need for successful and efficient debugging.
C:\Users\lxing\source\repos\lab5-debug\Debug\lab5-debug.exe (process 14328) exited with code 0.
Press any key to close this window . . .
```

4. Please follow the steps described in the problem to learn how to use the debugger in Microsoft Visual Studio.