**Student Name:**_____

Dry-run: Simulated Mid-term exam.

There are 4 questions of equal weight. Good luck.

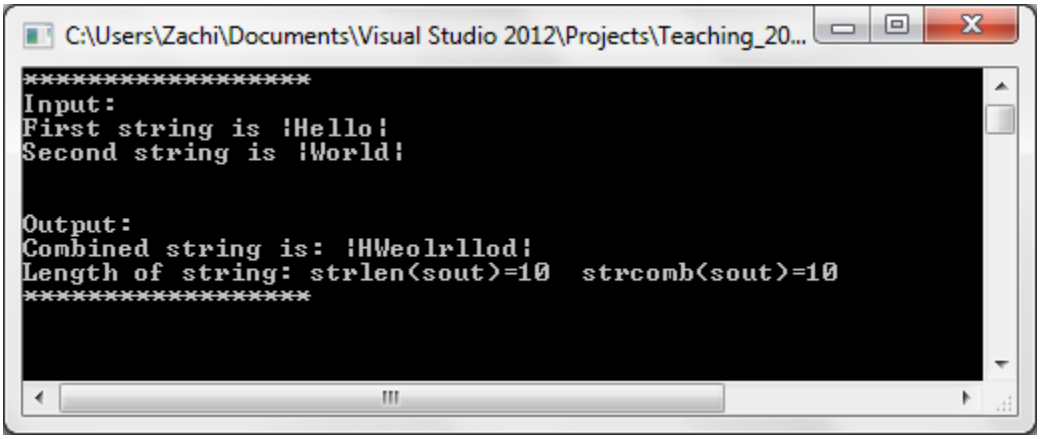
Please attach your code and a screen shot (if relevant) at the space allotted for ANSWER.

**Question 1: (25 points)**

```
/*
Complete the below program, which combines two strings of equal length.

The function "strcomb" takes 3 arguments:
s1: Input string 1
s2: Input string 2 (of the same length as s1)
sout : Output string 3

sout is composed of alternating characters from s1 and s2.
The function returns the length of the resulting string, sout.

Example:
s1="Hello"
s2="World"
then
sout="HWeolrllod"
and the return value is: 10.

See also screen shot below.

You are allowed to use only the functions described in this file.
*/

#include <stdio.h>

int strlen(char* s);
int strcomb(char s1[], char s2[], char sout[]);

int strlen(char* s)
{
	char *p = s;
	while (*p)
		p++;
	return (p-s);
}
```

```
int strcomb(*** fill in the missing parameter list ***)
{

***fill in the function body ****

}

main()
{
	char *s1 = "Hello";
	char *s2 = "World";
	char sout[80];
	int l;

	printf("******************\n");
	printf("Input:\n");
	printf("First string is |%s|\n",s1);
	printf("Second string is |%s|\n",s2);

	l = strcomb(s1,s2,sout) ;

	printf("\n\nOutput:\n");
	printf("Combined string is: |%s|\n",sout) ;
	printf("Length of string: strlen(sout)=%d  strcomb(sout)=%d\n",
				strlen(sout),strcomb(s1,s2,sout));
	printf("******************\n");

	getchar();
}
```

Example screen shot:

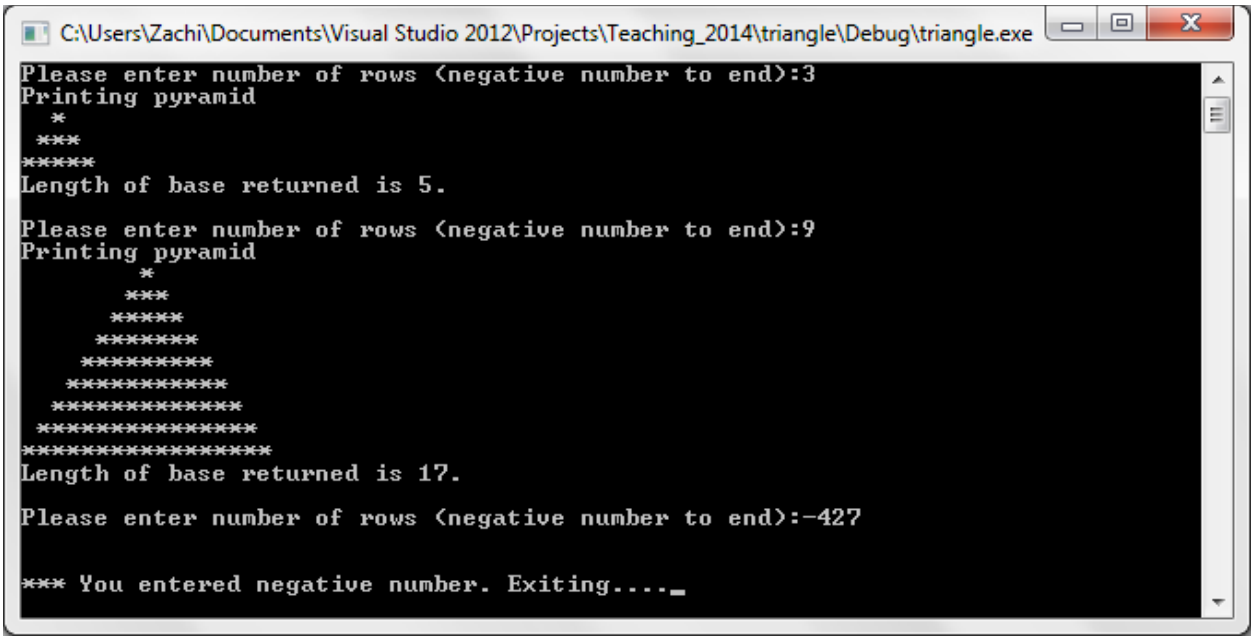



ANSWER 1

**Question 2: (25 points)**

```
/*
Complete the below program, which creates a pyramid.

The program prompts the user for an input as integer, and terminates when the user enters
negative number.

The function "printPyramid" takes one argument:
r: number of rows in pyramid

The function returns the numbr of columns the base spans.

Example:
r=3
The function prints:
  *
 ***
*****

and the return value is: 5.

See also screen shot below.


You are allowed to use only the functions described in this file.
*/



#include <stdio.h>

int printPyramid(int r);

int printPyramid(*** fill in ***)
{



}

main()
{

/* Below are only SOME of the print commands used, to save you printing time. */

       printf("Please enter number of rows (negative number to end):");



              printf("Printing pyramid\n");

              printf("Length of base returned is %d.\n\n",l);
```

```
        printf("\n\n*** You entered negative number. Exiting....");
}
```

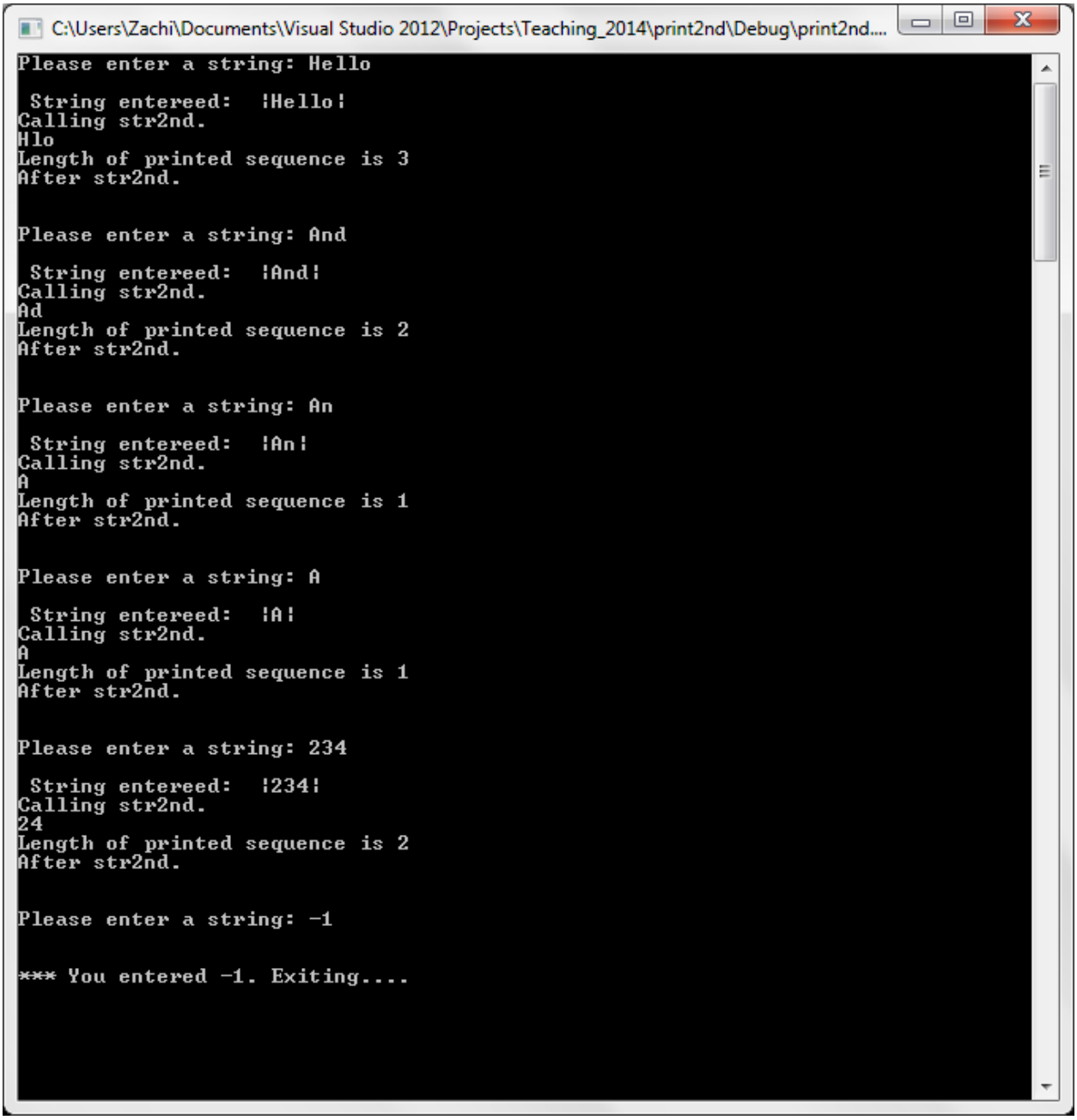



ANSWER 2

**Question 3: (25 points)**

```
/*
Complete the below program, which prints every other element of a string.
Please make sure of dealing with edge-cases (empty string etc).

The program prompts the user for a string, and stops when the user enters -1.
The program calls the function str2nd, which prints every other element of the string,
and returns the number of printed elements.

The function "str2nd" takes one argument:
s: Input string

The function prints every other element of the string.

The function returns the number of characters printed.

Example:
s="Hello"
then the function prints
Hlo
and the return value is: 3.

See also screen shot below.

You are allowed to use only the functions described in this file.
*/

#include <stdio.h>

int str2nd(char *s);

int str2nd(**** fill in arguments ****)
{


}


main()
{
        char s[80];
        int l;

        printf("Please enter a string: ");


                printf("\n String entereed:  |%s|\n",s);
                printf("Calling str2nd.\n");

                printf("\nLength of printed sequence is %d\n",l);
                printf("After str2nd.\n");



        printf("\n\n*** You entered -1. Exiting....");
```

```
	getchar();
	getchar();

}
```

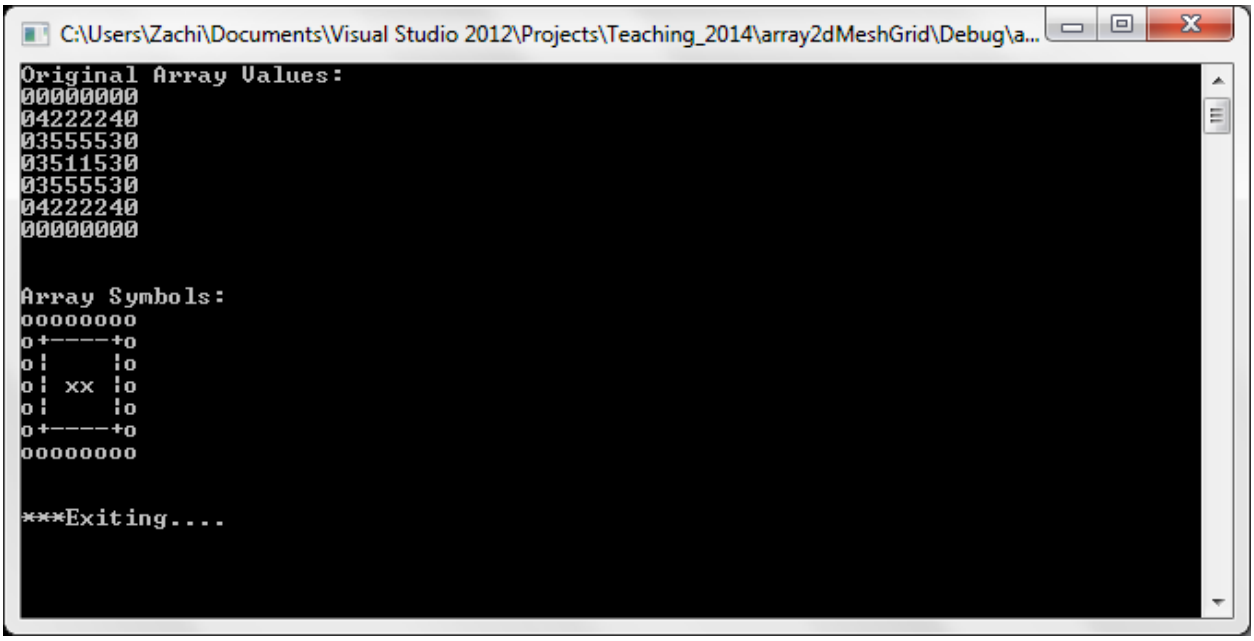



ANSWER 3

**Question 4: (25 points)**

```
/*
Complete the below program, which prints 2d array by values and by symbols.

The program has an intialized 2D array. The program then calls the function printValues,
which prints the 2d array values, and then calls printSymbols that prints the 2d array as
symbols.

The function printSymbols calls the function value2symbol, which converts (using a switch
statement)  the values into symbols, according to the following rules:
whenever the array value is 0 --> prints out 'o'
whenever the array value is 1 --> prints out 'x'
whenever the array value is 2 --> prints out '-'
whenever the array value is 3 --> prints out '|'
whenever the array value is 4 --> prints out '+'
whenever the array value is 5 --> prints out ' '

See also screen shot below.

You are allowed to use only the functions described in this file.
*/

#include <stdio.h>

#define ROWS 7
#define COLS 8

void printValues(int a[][COLS]);
void printSymbols(int a[][COLS]);
char value2symbol(int i);

void printValues(int a[][COLS])
{
	int rr, cc;

	for (rr=0; rr<ROWS; ++rr)
	{
		for (cc=0; cc<COLS; ++cc)
		{
			/* fill in one “printf” command here */
		}
		printf("\n");
	}
}

char value2symbol(int i)
{
	/* you need to write THIS function */
	return (‘?’);
}

void printSymbols(***  fill in here****)
{
	/* you need to write THIS function */
```

```
}
main()
{
	int a[ROWS][COLS]={
		{0,0,0,0,0,0,0,0},
		{0,4,2,2,2,2,4,0},
		{0,3,5,5,5,5,3,0},
		{0,3,5,1,1,5,3,0},
		{0,3,5,5,5,5,3,0},
		{0,4,2,2,2,2,4,0},
		{0,0,0,0,0,0,0,0}};


	printf("Original Array Values:\n");
	printValues(a);

	printf("\n\nArray Symbols:\n");
	printSymbols(a);

	printf("\n\n***Exiting....");

	getchar();

}
```




ANSWER 4