WINTER SEMESTER 2016

CSE2003: DATA STRUCTURES AND ALGORITHMS (EMBEDDED LAB) SLOT: L51+L52

FACULTY: THENDRAL.P

ASSIGNMENT-1

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13. Write a program in C to merge two different strings with even number of characters in such a way that the resultant string should display the characters of the first string interleaved with the characters of the second string and then create a new string by reversing both halves of the merged string.

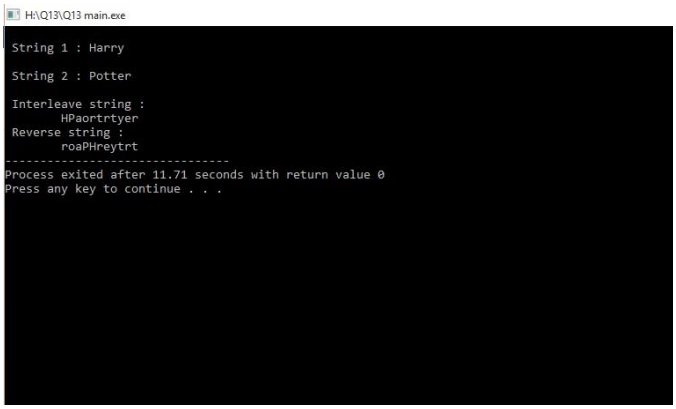
Code:

```
#include <stdio.h>
#include <string.h>

int main()
{
   char str1[20], str2[20], new1[40], new2[40];
   int l1, l2, i, j, ln;
   printf("\n String 1 : ");
   scanf("%s",str1);
   printf("\n String 2 : ");
   scanf("%s",str2);
   l1 = strlen(str1);
   l2 = strlen(str2);
   if(l1>l2)
   {
      for(i=0,j=0;j<l2;i=i+2,j++)
      {
         new1[i] = str1[j];
         new1[i+1] = str2[j];
      }
      for(;j<l1;i++,j++)
      {
         new1[i] = str1[j];
      }
   }
   else
   {
      for(i=0,j=0;j<l1;i=i+2,j++)
      {
         new1[i] = str1[j];
         new1[i+1] = str2[j];
      }
      for(;j<l2;i++,j++)
      {
         new1[i] = str2[j];
      }
      new1[i] = '\0';
   }
   printf("\n Interleave string : \n\t%s",new1);
   ln = strlen(new1);
```

```
    for(i=ln/2-1,j=0;i>=0;i--,j++)
    {
        new2[j] = new1[i];
    }
    for(i=ln-1;i>=ln/2;i--,j++)
    {
        new2[j] = new1[i];
    }
    new2[j] = '\0';
    printf("\n Reverse string : \n\t%s",new2);
    return 0;
}
```

Output:



14. Write a C program to solve the following problem:- Get a 4x4 matrix and print the same. Create 2 sub-matrices by folding the original matrix horizontally and vertically and print all the sub matrices. (Note: Vertical folding should be done with addition of corresponding elements and horizontal folding should be done with multiplication of corresponding elements)

Code:

```
#include <stdio.h>

int main()
{
    int mat[4][4], i, j, ver[4][2], hor[2][4]; printf("\n
    Enter the 4x4 matrix : \n"); for(i=0;i<4;i++)
    {
        for(j=0;j<4;j++)
        {
            scanf("%d",&mat[i][j]);
        }
    }
    printf("\n\n Matrix : ");
    for(i=0;i<4;i++)
    {
        printf("\n");
        for(j=0;j<4;j++)
        {
            printf("\t%d",mat[i][j]);
        }
    }
    for(i=0;i<4;i++)
    {
        for(j=0;j<2;j++)
```

```
        {
            ver[i][j] = mat[i][j] + mat[i][3-j];
        }
    }
    printf("\n\n Vertical matrix : ");
    for(i=0;i<4;i++)
    {
        printf("\n");
        for(j=0;j<2;j++)
        {
            printf("\t%d",ver[i][j]);
        }
    }
    for(i=0;i<2;i++)
    {
        for(j=0;j<4;j++)
        {
            hor[i][j] = mat[i][j] * mat[3-i][j];
        }
    }
    printf("\n\n Horizontal matrix : ");
    for(i=0;i<2;i++)
    {
        printf("\n");
        for(j=0;j<4;j++)
        {
            printf("\t%d",hor[i][j]);
        }
    }
    return 0;
}
```

Output: