PROGRAM TITLE: Write a user-defined function which performs: a) string copy; b) string reversal; c) string concatenation of two strings.

PROGRAM ALGORITHM:

```
algo main()
{
     /*ori,cop and concat are three strings*/
     initialize ch to zero
     do-while(ch not equal to four)
     {
          print a pretty looking menu
          input ch
          switch(ch)
          {
               case 1:input string to be copied
                      call strcopy(arguments: ori,cop)
                      break
               case 2:input string to be reversed
                      call strrev(arguments: ori,cop)
                      break
               case 3:input strings to be concated
                      call strconcat(arguments: ori,cop,concat)
                      break
               case 4:end program
                      break
               default:print "Invalid Choice"
          }
     }
}

algo strcopy(parameters: ori,cop)
{
     copy ori to cop
}
algo strrev(parameters: ori,cop)
{
     get stringlength
     for(i=1 to half of stringlength)
     {
          swap ith and ith from last element
     }
}
algo strconcat(parameters: ori,cop,concat)
{
     set concat as ori
     add cop to concat separated by space
}
```

PROGRAM CODE:

nt.c

```c
/*C Program to perform String operations*/
#include "size.h"
int main()
{
        int ch=0;
        char ori[STRNGSIZE],cop[STRNGSIZE],concat[STRNGSIZED];

        /*Display Menu to the user*/
        do
        {
                printf("Menu:\n1)String Copy\n2)String Reversal\n3)String
Concat\n4)Exit\n");
                scanf("%d",&ch);
                getchar();

                /*Call function corresponding to user choice*/
                switch(ch)
                {
                        case 1: printf("Enter String to be copied: ");
                                scanf("%[^\n]s",&ori);
                                strcopy(ori,cop);
                                printf("The copied String is: %s\n",cop);
                                break;
                        case 2: printf("Enter String to be reversed: ");
                                scanf("%[^\n]s",&ori);
                                strrev(ori);
                                printf("The reversed String is: %s\n",ori);
                                break;
                        case 3: printf("Enter 1st String: ");
                                scanf("%[^\n]s",&ori);
                                getchar();
                                printf("Enter 2nd String: ");
                                scanf("%[^\n]s",&cop);
                                strconcat(ori,cop,concat);
                                printf("The concatenated String is:
%s\n",concat);
                                break;
                        case 4: return 1;
                                break;
                        default:printf("Invalid Choice\n");
                }
        }
        while(ch!=4);
        return 0;
}
```

strfnc.c

```c
/*C Program containing functions for String operations*/
#include "size.h"

/*Function to Copy String*/
int strcopy(char *a,char *b)
{
```

```c
    int i,k=0;
    for(i=0;a[i]!='\0';i++)
    {
        b[k++]=a[i];
    }
    b[k]='\0';
    return 0;
}


/*Function to Reverse a String*/
int strrev(char* a)
{
    int i,k;
    char tmp;
    for(i=0;a[i]!='\0';i++);
    k=i-1;
    for(i=0;i<=k/2;i++)
    {
        tmp=a[i];
        a[i]=a[k-i];
        a[k-i]=tmp;
    }
    a[k+1]='\0';
    return 0;
}


/*Function to Concat two Strings*/
int strconcat(char* a,char* b,char* c)
{
    int i,k=0;
    for(i=0;a[i]!='\0';i++)
    {
        c[k++]=a[i];
    }
    c[k++]=' ';
    for(i=0;b[i]!='\0';i++)
    {
        c[k++]=b[i];
    }
    c[k]='\0';
    return 0;
}
```

size.h

```c
/*C Header File for String Operations*/
#include <stdio.h>
#ifndef SIZE_H
#define SIZE_H
    #define STRNGSIZE 50
    #define STRNGSIZED 101
    int strcopy(char* a,char* b);
    int strrev(char* a);
    int strconcat(char* a,char* b,char* c);
#endif
```

OUTPUT:

```
Menu:
1)String Copy
2)String Reversal
3)String Concat
4)Exit
1
Enter String to be copied: My name is Anthony Gonsalves
The copied String is: My name is Anthony Gonsalves
Menu:
1)String Copy
2)String Reversal
3)String Concat
4)Exit
2
Enter String to be reversed: I am a very good boy
The reversed String is: yob doog yrev a ma I
Menu:
1)String Copy
2)String Reversal
3)String Concat
4)Exit
3
Enter 1st String: Amar Akbar
Enter 2nd String: Anthony
The concatenated String is: Amar Akbar Anthony
Menu:
1)String Copy
2)String Reversal
3)String Concat
4)Exit
5
Invalid Choice
Menu:
1)String Copy
2)String Reversal
3)String Concat
4)Exit
4
```

DISCUSSION:

This Program works fine. The max length of the strings can be adjusted by simply changing the corresponding lengths in the size.h header file.