CHAPTER 9 - STRINGS

I. EXERCISES WITH SOLUTION

Exercise 1: Write a C program input one job from the keyboard. If job is programming then display to screen message: ”That is interesting job” otherwise display message: ”Why you choose “ + job.

Screen example: Enter one job: designing

Why you choose designing

- Solution
- Pseudo code

```
BEGIN
    DECLARE job {variable suitable for storing a name 10 characters long}
    INPUT job
    IF job = “programming” THEN
      DISPLAY “That is interesting job.”
    ELSE
      DISPLAY “Why you choose “ + job
    END IF
END
```

- C code

```
/*Program inputs string from keyboard, display suitable message
defend on given string
date writen:10.07.2008
author:
version:1.0*/
#include<stdio.h>
```

```
#include<conio.h>
#include<string.h>
void main(void)
{
     //declare variable
     char job[11];
     //clear screen
     clrscr();
     //input the string
     printf("\nEnter a job:");
     scanf("%s",job);
     if(strcmp(job,"programming")==0)
          printf("\nThat is interesting job");
     else
          printf("\nWhy you choose %s",job);
     printf("\nPress any key to continue");
     getch();//stop screen to view result
}
```

Exercise 2: Write a C program inputs a sentence from the keyboard. Display each word in a line.

Screen example when program runs

Enter a sentence please: Happy New Year

Happy

New

Year

- **Solution**
- **Pseudo code**

BEGIN

```
DECLARE sentence {variable suitable for storing a name 80 characters long}
INPUT sentence
FOR i=0 TO length of sentence -  1 DO
        IF sentence[i]<>' ' THEN
                DISPLAY sentence[i]
        ELSE
                IF sentence[i+1]<>' ' THEN
                        enter newline
                END_IF
        END_IF
END_FOR
```

END

- **C code**

```
/*Program inputs sentence from keyboard,
display each word on a new line
date writen:10.07.2008
author:
version:1.0*/
#include<stdio.h>
#include<conio.h>
#include<string.h>
void main(void)
{
```

```
    //declare variable
    char sentence[81];
    int i;
    //clear screen
    clrscr();
    //input the string
    printf("\nEnter a sentence please:");
    gets(sentence);
    for(i=0;i<strlen(sentence);i++)
        if(sentence[i]!=' ')
            printf("%c",sentence[i]);
        else if(sentence[i+1]!=' ')
            printf("\n");
    printf("\nPress any key to continue");
    getch();//stop screen to view result
}
```

Exercise 3: Write functions to perform following tasks:

1. Input integer n (0 < n <=50) and n string from the keyboard.
2. Display each string in a new line.
3. Check a string is symmetric or not.
4. Display all symmetric string to the screen.

Write a C program uses functions you have written in 1 - 4 to input n strings from the keyboard, display them to the screen, display all symmetric strings to the screen.

- Solution
- Pseudo code

BEGIN

CALL function inputString

CALL function displayString

```
        CALL function displaySymmetricString
END
MODULE inputString with two parameter array of strings a and number of string n
        INPUT n
        {Validate n so that it greater than zero and less than or equals to 50}
        WHILE n<=0 OR n>50 DO
          DISPLAY ErrMess
          INPUT n
        END_WHILE
        FOR i=0 TO n-1 DO
          INPUT a[i]
        END_FOR
END_MODULE
MODULE displayString with two parameter array of strings a and number of string n
        FOR i=0 TO n-1 DO
          DISPLAY a[i]
        END_FOR
END_MODULE
MODULE checkSymmetricString with a argument string s
        {Symmetric string is string that it equals to reserve it self}
```

{Reserve string s}

FOR i=0,j=strlen(s)-1 TO strlen(s)-1 DO

temp[i]=s[j]

END_FOR

IF temp=s THEN

RETURN 1{true if s is symmetric string}

ELSE

RETURN 0

END_IF

END_MODULE

MODULE displaySymmetricString with two parameter array of strings a and number of string n

FOR i=0 TO n-1 DO

CALL checkSymmetricString with parameter a[i]

IF result return from checkSymmetric is 1 THEN

DISLAY a[i]

END_IF

END_FOR

END_MODULE

- C code

```
/*Program inputs n strings from keyboard, display each string on
a new line and symmetric strings
```

```
date writen:10.07.2008
author:
version:1.0*/
#include<stdio.h>
#include<conio.h>
#include<string.h>
//Function prototype
void inputString(char a[][80],int *n);
void displayString(char a[][80],int n);
int checkSymmetricString(char s[]);
void displaySymmetricString(char a[][80],int n);
void main(void)
{
     //declare variable
     char a[50][80];
     int n;
     //clear screen
     clrscr();
     //call function inputString
     inputString(a,&n);
     //call function displayString
     displayString(a,n);
     //Call function displaySymmetricString
     displaySymmetricString(a,n);
     printf("\nPress any key to continue");
     getch();//stop screen to view result

}
void inputString(char a[][80],int *n)
{
     int i;
     printf("\nEnter the number of strings please:");
```

```
     scanf("%d",n);
     //validate n so that n>0 and n<=50
     while(*n<=0||*n>50)
     {
          printf("\nReenter n so that n>0 and n<=50:");
          scanf("%d",n);
     }
     //Input n string
        fflush(stdin);
     for(i=0;i<*n;i++)
     {
          printf("\nEnter string %d:",i+1);
          gets(a[i]);
     }
}
void displayString(char a[][80],int n)
{
     int i;
     printf("\nAll strings you have entered\n");
     for(i=0;i<n;i++)
          printf("\n%s",a[i]);
}
int checkSymmetricString(char s[])
{
     char temp[80];
     int i;//index of s
     int j;//index of temp
     for(j=0,i=strlen(s)-1;j<strlen(s);i--,j++)
          temp[j]=s[i];
     temp[j]='\0';//append null character end of temp
     if(strcmp(temp,s)==0)
          return 1;
```

```
    else
        return 0;
}
void displaySymmetricString(char a[][80],int n)
{
    int i;
    printf("\nAll symmetric string are:");
    for(i=0;i<n;i++)
        if(checkSymmetricString(a[i])==1)
            printf("\n%s",a[i]);
}
```

Exercise 4: Write functions to perform following tasks:

1. Input number of string n (n>0 and n<=20) and n string from the keyboard.
2. Display all string you have entered to the screen
3. Enter a character from the keyboard
4. Display to the screen all string contain character you have entered

Write a C program uses function in 1-4 to input n (n>0 and n<=20) string from the keyboard. Display them to the screen. Enter a character from key board then display all string contain this character.

- **Solution**
- **Pseudo code**

BEGIN

CALL function inputString

CALL function displayString

CALL function inputCharacter

CALL function displayContainCharacter

```
END

MODULE inputString with two parameter array of strings a and number of string n
        INPUT n
        {Validate n so that it greater than zero and less than or equals to 20}
        WHILE n<=0 OR n>20 DO
          DISPLAY ErrMess
          INPUT n
        END_WHILE
        FOR i=0 TO n-1 DO
          INPUT a[i]
        END_FOR
END_MODULE

MODULE displayString with two parameter array of strings a and number of string n
        FOR i=0 TO n-1 DO
          DISPLAY a[i]
        END_FOR
END_MODULE

MODULE inputCharacter
        INPUT ch
        RETURN ch
```

END_MODULE

MODULE displayContainCharacter with three arguments array of string a, number of string n and character ch

FOR i=0 TO n-1 DO

IF a[i] contains ch THEN

DISLAY a[i]

END_IF

END_FOR

END_MODULE

- **C code**

```
/*Program inputs n strings from keyboard, display each string on
a new line
and symmetric string
date writen:10.07.2008
author:
version:1.0*/
#include<stdio.h>
#include<conio.h>
#include<string.h>
//Function prototype
void inputString(char a[][80],int *n);
void displayString(char a[][80],int n);
char inputCharacter(void);
void displayContainCharacter(char a[][80],int n,char ch);
void main(void)
{
     //declare variable
     char a[50][80];
```

```
	int n;
	char ch;
	//clear screen
	clrscr();
	//call function inputString
	inputString(a,&n);
	//call function displayString
	displayString(a,n);
	//Call function inputCharacter
	ch=inputCharacter();
	//call function displayContainCharacter
	displayContainCharacter(a,n,ch);
	printf("\nPress any key to continue");
	getch();//stop screen to view result

}
void inputString(char a[][80],int *n)
{
	int i;
	printf("\nEnter the number of strings please:");
	scanf("%d",n);
	//validate n so that n>0 and n<=20
	while(*n<=0||*n>20)
	{
		printf("\nReenter n so that n>0 and n<=50:");
		scanf("%d",n);
	}
	//Input n string
	fflush(stdin);
	for(i=0;i<*n;i++)
	{
		printf("\nEnter string %d:",i+1);
```

```
          gets(a[i]);
     }
}
void displayString(char a[][80],int n)
{
     int i;
     printf("\nAll strings you have entered\n");
     for(i=0;i<n;i++)
          printf("\n%s",a[i]);
}
char inputCharacter(void)
{
     char temp;
     printf("\nEnter a character please:");
     fflush(stdin);
     scanf("%c",&temp);
     return temp;
}
void displayContainCharacter(char a[][80],int n,char ch)
{
     int i;
     printf("\nAll string contain %c are:\n",ch);
     for(i=0;i<n;i++)
          if(strchr(a[i],ch)!=NULL)
               printf("%s\n",a[i]);
}
```

II. EXERCISES WITHOUT SOLUTION

Exercise 1: Write a C program inputs sentence from the keyboard. Display this sentence to the screen. You should display to the screen massage this sentence is standard string or not.

Hint: Standard string is a string has no space at begin and end of string and each word separate by only one space.

Exercise 2: Write a C program inputs a sentence from the keyboard. Display this sentence to the screen. Count consonants and vowels in the sentence you have entered. Display result to the screen.

Hint: vowel include: ‘a’, ‘A’, ‘e’, ‘E’, ‘i’, ‘I’, ‘o’, ‘O’, ‘u’, ‘U’.

Exercise 3: Write a C program inputs sentence from keyboard. Display this sentence to the screen. Capital first letter of each word. Display sentence to the screen.

Exercise 4: Write functions to perform following tasks:

1. Input integer n (0 < n <=10) and n string from the keyboard.
2. Display each string in a new line.
3. Find and display to the screen the string has max length.
4. Display all strings have even length.

Write a C program uses functions you have written in 1 - 4 to input n strings from the keyboard, display them to the screen, display to the screen string has max length. Display all strings have even length.

Exercise 5: Write functions to perform following tasks:

1. Input number of string n (n>0 and n<=30) and n string from the keyboard.
2. Display all string you have entered to the screen
3. Enter a character from the keyboard
4. Count string contains character you have entered. Display result to the screen.

Write a C program uses function in 1 - 4 to input n (n>0 and n<=30) string from the keyboard. Display them to the screen. Enter a character from key board then count string contains character you have entered. Display result to the screen.

Exercise 6: Write a C program inputs a sentence from a keyboard. Display the string you have entered. Count number of word in the string. Display result to the screen.

Hint: word is string does not contain space and each word separate by one or more space.