

EEE101 C Programming and Software Engineering

Solutions to Lab Practice 7

Exercise 1

The string termination character ‘\0’ (or NULL) is missing. The declaration of the array as a string would be:

```
char name[] = {'F', 'a', 'n', 't', 'a', 's', 't', 'i', 'c', '\0'};
```

Exercise 2

The program first returns a string "hel" and then returns a string "hello".

Exercise 3

```
int digits[10];  
float rates[6];
```

Exercise 4

If you input 9 from the keyboard when requested, the program will print:
month 9 has 30 days.

After the first statement: index=8 and month=8.

After the second statement: index=8 and month=9.

Exercise 5

```
int digits[6] = {1, 2, 4, 8, 16, 32};
```

Exercise 6

```
int digits[] = {0,0,0,0,0,0,0,0,0,0,  
0,0,0,0,0,0,0,0,0,0,  
0,0,0,0,0,0,0,0,0,0,  
0,0,0,0,0,0,0,0,0,0,  
0,0,0,0,0,0,0,0,0,0,  
0,0,0,0,0,0,0,0,0,0,  
0,0,0,0,0,0,0,0,0,0,  
0,0,0,0,0,0,0,0,0,0,  
0,0,0,0,0,0,0,0,0,0,  
0,0,0,0,0,0,0,0,0,0,  
0,0,0,0,0,0,0,0,0,0,  
0,0,0,0,0,0,0,0,-1};
```

or

```
int digits[100];  
digits[99] = -1;
```

Exercise 7

```
main(){
    int i;
    float array1[5] = {1.34, 2.83, 17.82, 127.12, 0.12};
    float array2[5];

    for(i=0;i<4;i++){          /*copy and print the first four elements of the array*/
        array2[i]= array1[i];
        printf("%.2f, ", array2[i]);
    }

    array2[4]= array1[4];          /*copy the last element of the array*/
    printf("%.2f", array2[4]);      /*print the last element of the array*/

    for(i=0;i<4;i++){          /*sum up five float numbers*/
        array2[0] += array2[i+1];
    }
    printf("\nThe average is: %.3f\n", array2[0]/5.0);      /*print the average*/
}
```

Exercise 8

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

main(){
    float t[3][4];
    int i,j;
    float sum;
    srand(time(NULL));

    for(i=0;i<3;i++){          /*initialise the elements in t with random floating point numbers*/
        for(j=0;j<4;j++){
            t[i][j]= ((float) rand()/(rand()+1));
            printf("The random floating number generated is %f\n",t[i][j]);
            sum += t[i][j];
        }
    }

    printf("\nThe sum of the elements is %f\n",sum);
}
```

Exercise 9

Part 1

9	32
10	101
20	12
12	20
101	10
32	9

Part 2

First part - the variable index is initialised with the value 0 and the pointer ptr is allocated to point at the sixth element of the array ref[].

Second part - indicates the exit condition for the **for** loop is when the value of the variable index becomes 6.

Third part - index increments (by 1 in each loop) and the pointer ptr decrements (shifting to the left by 1 position in each loop).

printf - just prints the value of the array ref[index] and the value pointed by the pointer ptr in each loop.

Exercise 10

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

```
void maxmin(int t[], int size, int *admax, int *admin);/*prototype of function maxmin*/
```

```
main(){
    int t[8]={2,5,7,2,9,3,9,4};
    int tmax, tmin;
    maxmin(t,8,&tmax,&tmin);
    printf("The minimum number in the array is %d.\n", tmin);
    printf("The maximum number in the array is %d.\n", tmax);
}
```

```
void maxmin(int t[], int size, int *admax, int *admin){
    int i;
    *admin=t[0];
    for(i=0; i<size; i++) {    /*determine the minimum element in the array using a loop*/
        if(t[i]< *admin)
            *admin = t[i];
    }
    *admax=t[0];
    for(i=0; i<size; i++) {    /*determine the maximum element in the array using a loop*/
        if(t[i]> *admax)
            *admax = t[i];
    }
}
```