

Laboratory 4

1. Questions

1. Create a structure named company which has name, address, phone and noOfEmployee as member variables. Read name of company, its address, phone and noOfEmployee. Finally display these members' value.
2. Create a structure TIME with members hours, minutes and seconds. Write a C program to add two time objects by passing structure variables to function and display result in H: M: S format.
3. Write a program to read RollNo, Name, Address, Age & average-marks of 'n' students in a class. Print the list of students and the youngest and eldest student in the class.

2. Algorithm

Q1:-

Step1:- start

Step2:- create structure "company" with variables as name(char), address(char)
,phone(long int),num_emp(long int)

Step3:- struct company c;

Step4:- use fflush(stdin) to clear previous garbage data

Step5:- input address using gets(c.address)

Step6:- also input name, phone, no. of employees.

By scanf("%s %ld %ld",&c.name,&c.phone,&c.num_emp);

Step7:- print("%s %s %ld %ld",c.name, c.address, c.phone, c.num_emp);

Step8: stop

Q2:-

Step1:- start

Step2:- create structure "time" with variables as s,m,h of type int

Step3:- struct time t1,t2;

Step4:- define function "add" with structure inputs t1 and t2.

- 4.1) take variable min,sec,hour of type integer
- 4.2) sec=t1.s+t2.s;
- 4.3) min=t1.m+t2.m+sec/60;
- 4.4) sec=sec%60;
- 4.5) hour=t1.h+t2.h+min/60;
- 4.6) min=min%60;
- 4.7)print ("hours=%d,min=%d,sec=%d",hour,min,sec);

Step5:- input variables of time t1 and t2;

Step6:- call function add(t1,t2)

Step7:- stop

Q3:-

Step1:- start

Step2:- create structure "student" with variables as rno(int), name(char), address(char), age(int), avg_m(int)

Step3:- struct student s[20]

Step4:- take variables l,n,faltu of type integer

Step5:- input no of students(n)

Step6:- input variables of student by running for loop from(i=1 to i<=n) by incrementing i.

Step7:-input address separately in same loop by "gets(s[i].address)"

Step8:- take variable young=s[1],elder=0,pos=0,pos1=1 of type integer

Step9:- run loop from (i=1 to i<=n) by incrementing i

- 9.1) print("%s \n",s[i].name);
- 9.2) if(s[i].age>elder) then
elder=s[i].age;
pos=i;
- 9.3) if(s[i].age<young) then
young=s[i].age;
pos1=i;

Step10:- print("eldest student= %s \n",s[pos].name);

print("youngest student= %s",s[pos1].name);

Step11:- stop

3. Program

1)

```
3  #include <stdio.h>
4  #include <stdlib.h>
5  struct company{
6      char name[20];
7      char address[60];
8      long int phone;
9      long int num_emp;
10 };
11 struct company c;
12 int main(int argc, char** argv) {
13     fflush(stdin);
14     printf("enter address of company : \n");
15     gets(c.address);
16     printf("enter name,phone,no. of employees :\n");
17     scanf("%s %ld %ld", &c.name, &c.phone, &c.num_emp);
18
19     printf("\n name of company is %s \n", c.name);
20     printf("address of company is %s \n", c.address);
21     printf("phone num of company is %ld \n", c.phone);
22     printf("number of employees is %ld \n", c.num_emp);
23
24     return (EXIT_SUCCESS);
25 }
```

2)

```
1  #include <stdio.h>
2  #include <stdlib.h>
3  struct time{
4      int s,m,h;
5  };
6  struct time t1,t2;
7  void add(struct time t1,struct time t2)
8  {
9      int min,sec,hour;
10     sec=t1.s+t2.s;
11     min=t1.m+t2.m+sec/60;
12     sec=sec%60;
13     hour=t1.h+t2.h+min/60;
14     min=min%60;
15     printf("hours=%d,min=%d,sec=%d",hour,min,sec);
16 }

17 int main(int argc, char** argv) {
18     printf("enter 1st time object");
19     scanf("%d %d %d",&t1.h,&t1.m,&t1.s);
20     printf("enter 2nd time object");
21     scanf("%d %d %d",&t2.h,&t2.m,&t2.s);
22     add(t1,t2);
23     return 0;
24 }
```

3):-

```

1  #include <stdio.h>
2  #include<stdlib.h>
3  struct student{
4      int rno;
5      char name[20];
6      char address[60];
7      int age;
8      int avg_m;
9  };
10 struct student s[20];
11 int main(int argc, char** argv) {
12     int i,n,faltu;
13     printf("number of students :- ");
14     scanf("%d",&n);
15     for(i=1;i<=n;i++){
16         printf("enter roll no,name,age,average marks of student %d:\n",i);
17         scanf("%d %s %d %d",&s[i].rno,&s[i].name,&s[i].age,&s[i].avg_m);
18         printf("enter address of student %d :-",i);
19         scanf("%d",&faltu);
20         gets(s[i].address);
21     }

```

```

22     int young=s[1].age,elder=0;
23     int pos=0,pos1=1;
24     printf(" \n list of students is : \n");
25     for(i=1;i<=n;i++){
26         printf("%s \n",s[i].name);
27         if(s[i].age>elder){
28             elder=s[i].age;
29             pos=i;
30         }
31         if(s[i].age<young){
32             young=s[i].age;
33             pos1=i;
34         }
35     }
36     printf("eldest student= %s \n",s[pos].name);
37     printf("youngest student= %s",s[pos1].name);
38
39     return 0;
40 }
41
42

```

4. Presentation of Results

1)

```
enter address of company :
flat no1,srs flats ,peenya
enter name,phone,no. of employees :
john 45784578 789

name of company is john
address of company is flat no1,srs flats ,peenya
phone num of company is 45784578
number of employees is 789

RUN SUCCESSFUL (total time: 52s)
```

2)

```
enter 1st time object10 120 200
enter 2nd time object10 120 100
hours=24,min=5,sec=0
RUN SUCCESSFUL (total time: 26s)
```

3)

```
number of students :- 3
enter roll no,name,age,average marks of student 1:
1 aman 17 67
enter address of student 1 :-1 23street dekhi
enter roll no,name,age,average marks of student 2:
2 amit 18 66
enter address of student 2 :-2 jj,rajasthan
enter roll no,name,age,average marks of student 3:
3 kaushal 19 99
enter address of student 3 :-3 chennai,tamilnadu

list of students is :
aman
amit
kaushal
eldest student= kaushal
youngest student= aman
RUN SUCCESSFUL (total time: 1m 27s)
```

5. Conclusions :- all the programs have been successfully executed with zero errors.