PROGRAMMING FUNDAMENTALS
LAB 10 ASSIGNMENT

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24K – 0530

1D

Q1)

```
#include<stdio.h>
int sum(int num);
main(){
        int num;
        printf("enter a number:");
        scanf("%d",&num);
printf("\n%d",sum(num));

}
int  sum(int num){
        int n;
        if (num==0){
                return ;
        }
        n=num%10;
        num=num/10;
        return n+sum(num);
}
```

Q2)

```
#include<stdio.h>
#include<string.h>
void reverse(char string[],int l,int start);
main(){
	char string[10];
	printf("Enter your string:");
	scanf("%s",string);
	int l=strlen(string);
	reverse(string,l,0);
	printf("Reversed string: %s\n", string);
}
void reverse(char string[],int l,int start){
	char temp;
	if (start>=l){
		return;
	}
	temp=string[l-1];
	string[l-1]=string[start];
	string[start]=temp;
	reverse(string,l-1,start+1);



}
```

Q3)

```
#include<stdio.h>
#include<string.h>
struct flights {
   char flight_no[20];
   char depart_city[20];
   char dest_city[20];
   char date[20];
   int available_seats;
};

void booking(struct flights f1, struct flights f2, struct flights f3, struct flights f4, char f_choice[]);
void display(struct flights f1, struct flights f2, struct flights f3, struct flights f4);

int main() {
   int choice;
   char f_choice[20];

   struct flights f1 = {"PK621", "karachi", "dubai", "12-10-2024", 24};
   struct flights f2 = {"PK548", "lahore", "jeddah", "30-10-2024", 16};
   struct flights f3 = {"PK478", "islamabad", "lahore", "16-10-2024", 4};
   struct flights f4 = {"PK120", "peshawar", "karachi", "4-10-2024", 8};

   printf("1. Book\n2. View flight details\nEnter your choice: ");
   scanf("%d", &choice);

   if (choice == 1) {
      display(f1, f2, f3, f4);
```

```
      printf("Enter flight number: ");
      scanf("%s", f_choice);
      booking(f1, f2, f3, f4, f_choice);
   } else if (choice == 2) {
      display(f1, f2, f3, f4);
   }

   return 0;
}

void display(struct flights f1, struct flights f2, struct flights f3, struct flights f4) {
   printf("1. Flight number: %s\nDeparture city: %s\nDestination city: %s\nDate: %s\nAvailable
seats: %d\n",
        f1.flight_no, f1.depart_city, f1.dest_city, f1.date, f1.available_seats);
   printf("2. Flight number: %s\nDeparture city: %s\nDestination city: %s\nDate: %s\nAvailable
seats: %d\n",
        f2.flight_no, f2.depart_city, f2.dest_city, f2.date, f2.available_seats);
   printf("3. Flight number: %s\nDeparture city: %s\nDestination city: %s\nDate: %s\nAvailable
seats: %d\n",
        f3.flight_no, f3.depart_city, f3.dest_city, f3.date, f3.available_seats);
   printf("4. Flight number: %s\nDeparture city: %s\nDestination city: %s\nDate: %s\nAvailable
seats: %d\n",
        f4.flight_no, f4.depart_city, f4.dest_city, f4.date, f4.available_seats);
}

void booking(struct flights f1, struct flights f2, struct flights f3, struct flights f4, char f_choice[]) {
   if (strcmp(f1.flight_no, f_choice) == 0) {
      if (f1.available_seats > 0) {
         printf("Your booking for %s is done.\n", f1.flight_no);
      } else {
```

```
            printf("No booking available for this flight. Thank you!\n");
        }
    }
    else if (strcmp(f2.flight_no, f_choice) == 0) {
        if (f2.available_seats > 0) {
            printf("Your booking for %s is done.\n", f2.flight_no);
        } else {
            printf("No booking available for this flight. Thank you!\n");
        }
    }
    else if (strcmp(f3.flight_no, f_choice) == 0) {
        if (f3.available_seats > 0) {
            printf("Your booking for %s is done.\n", f3.flight_no);
        } else {
            printf("No booking available for this flight. Thank you!\n");
        }
    }
    else if (strcmp(f4.flight_no, f_choice) == 0) {
        if (f4.available_seats > 0) {
            printf("Your booking for %s is done.\n", f4.flight_no);
        } else {
            printf("No booking available for this flight. Thank you!\n");
        }
    }
    else {
        printf("Wrong flight number.\n");
    }
}
```

Q4)

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

struct movie {
   char title[30];
   char genre[20];
   char director[20];
   int release_year;
   float rating;
};

void print(struct movie m1, struct movie m2, struct movie m3, struct movie m4) {
   printf("\nTitle: %s\nGenre: %s\nDirector: %s\nRelease Year: %d\nRating: %.1f\n",
        m1.title, m1.genre, m1.director, m1.release_year, m1.rating);
   printf("\nTitle: %s\nGenre: %s\nDirector: %s\nRelease Year: %d\nRating: %.1f\n",
        m2.title, m2.genre, m2.director, m2.release_year, m2.rating);
   printf("\nTitle: %s\nGenre: %s\nDirector: %s\nRelease Year: %d\nRating: %.1f\n",
        m3.title, m3.genre, m3.director, m3.release_year, m3.rating);
   printf("\nTitle: %s\nGenre: %s\nDirector: %s\nRelease Year: %d\nRating: %.1f\n",
        m4.title, m4.genre, m4.director, m4.release_year, m4.rating);
}


void search(char s[], struct movie m1, struct movie m2, struct movie m3, struct movie m4) {
   int found = 0;

   if (strcmp(m1.genre, s) == 0) {
```

```
        printf("\nTitle: %s\nGenre: %s\nDirector: %s\nRelease Year: %d\nRating: %.1f\n",
            m1.title, m1.genre, m1.director, m1.release_year, m1.rating);
        found = 1;
    }
    if (strcmp(m2.genre, s) == 0) {
        printf("\nTitle: %s\nGenre: %s\nDirector: %s\nRelease Year: %d\nRating: %.1f\n",
            m2.title, m2.genre, m2.director, m2.release_year, m2.rating);
        found = 1;
    }
    if (strcmp(m3.genre, s) == 0) {
        printf("\nTitle: %s\nGenre: %s\nDirector: %s\nRelease Year: %d\nRating: %.1f\n",
            m3.title, m3.genre, m3.director, m3.release_year, m3.rating);
        found = 1;
    }
    if (strcmp(m4.genre, s) == 0) {
        printf("\nTitle: %s\nGenre: %s\nDirector: %s\nRelease Year: %d\nRating: %.1f\n",
            m4.title, m4.genre, m4.director, m4.release_year, m4.rating);
        found = 1;
    }

    if (!found) {
        printf("\nNo movies found with genre: %s\n", s);
    }
}

int main() {
    int choice;
    char s[20];
```

```
struct movie m1 = {"PK", "comedy", "xyz", 2014, 4.0};
struct movie m2 = {"DHAMAL", "comedy", "xyz", 2006, 3.9};
struct movie m3 = {"FAN", "horror", "xyz", 2016, 3.6};
struct movie m4 = {"GOLMAL", "comedy", "xyz", 2007, 4.2};
struct movie m5;

printf("1. View movies\n2. Search movie\n3. Add movie\nEnter your choice: ");
scanf("%d", &choice);

if (choice == 3) {

   printf("Enter title: ");
   getchar();
   fgets(m5.title, sizeof(m5.title), stdin);
   m5.title[strcspn(m5.title, "\n")] = '\0';
   printf("Enter genre: ");
   fgets(m5.genre, sizeof(m5.genre), stdin);
   m5.genre[strcspn(m5.genre, "\n")] = '\0';

   printf("Enter director: ");
   fgets(m5.director, sizeof(m5.director), stdin);
   m5.director[strcspn(m5.director, "\n")] = '\0';

   printf("Enter release year: ");
   scanf("%d", &m5.release_year);

   printf("Enter rating: ");
   scanf("%f", &m5.rating);
```

```
        printf("New movie added successfully!\n");

    } else if (choice == 1) {

        print(m1, m2, m3, m4);
    } else {

        printf("Enter the genre you want to search: ");
        scanf("%s",&s);
        search(s, m1, m2, m3, m4);
    }

    return 0;
}
```

Q5)

```
#include <stdio.h>

void printArray(int arr[], int size) {
    if (size == 0) {
        return;
    }
    printf("%d ", arr[0]);
    printArray(arr + 1, size - 1);
}

int main() {
    int size;
    printf("Enter array size: ");
    scanf("%d", &size);
    int arr[size];
    printf("Enter %d elements:\n", size);
    for (int i = 0; i < size; i++) {
        scanf("%d", &arr[i]);
    }

    printf("Array elements: ");
    printArray(arr, size);
    printf("\n");

    return 0;
}
```

Q6)

```
#include<stdio.h>
#include<math.h>
struct point{
	int x_cord;
	int y_cord;
};
struct rectangle{
	int x1_cord;
	int y1_cord;
	int x2_cord;
	int y2_cord;
};
float distance(struct point p1,struct point p2){
	float d=sqrt(pow((p2.x_cord-p1.x_cord),2)+pow((p2.y_cord-p1.y_cord),2));
	return d;
}
void p_check(struct rectangle r1,struct point p1){
	if (p1.x_cord>r1.x1_cord && p1.x_cord<r1.x2_cord && p1.y_cord<r1.y1_cord &&
p1.y_cord>r1.y2_cord){
		printf("point 1 is within the rectangle");
	}
}
main(){
	struct point p1;
	struct point p2;
	printf("Enter coordinates for point 1:\n");
	scanf("%d",&p1.x_cord);
	scanf("%d",&p1.y_cord);
```

```
        printf("Enter coordinates for point 2:\n");
        scanf("%d",&p2.x_cord);
        scanf("%d",&p2.y_cord);
        printf("%f",distance(p1,p2));
    struct rectangle r1={1,3,5,0};

    p_check(r1,p1);


}
```

Q7)

```
#include<stdio.h>
#define max_temp 80
void check(float temp){
	static int count=0;
	if (temp<max_temp){
		printf("\nTempreture in limit");
	}else {
		count++;
		printf("\nyou entered a tempreture exceeding the limit");
		printf("\ncount for tempreture exceeding limit:%d",count);
	}
}
main(){
	float temp;
	int select;
	do{

	printf("\nenter tempreture:");
	scanf("%f",&temp);
	check(temp);
	printf("\nDo you want to enter any other tempreture? press 1 for yes and 2 for no : ");
	scanf("%d",&select);
	}while (select==1);



}
```

Q8)

```
#include<stdio.h>
#include<string.h>
struct car{
        char make[20];
        int model;
   float mileage;
   float price;
};
void print(struct car c1,struct car c2,struct car c3,struct car c4){
        printf("\n %s \n %d \n %.2f \n %.2f",c1.make,c1.model,c1.mileage,c1.price);
        printf("\n %s \n %d \n %.2f \n %.2f",c2.make,c2.model,c2.mileage,c2.price);
        printf("\n %s \n %d \n %.2f \n %.2f",c3.make,c3.model,c3.mileage,c3.price);
        printf("\n %s \n %d \n %.2f \n %.2f",c4.make,c4.model,c4.mileage,c4.price);
}
void search(int smod,char smake[],struct car c1,struct car c2,struct car c3,struct car c4){
        if (strcmp(c1.make,smake)==0&&c1.model==smod){
                printf("\n %s \n %d \n %.2f \n %.2f",c1.make,c1.model,c1.mileage,c1.price);
        }else if (strcmp(c2.make,smake)==0&&smod==c2.model){
                printf("\n %s \n %d \n %.2f \n %.2f",c2.make,c2.model,c2.mileage,c2.price);
        }else if (strcmp(c3.make,smake)==0&&smod==c3.model){
                printf("\n %s \n %d \n %.2f \n %.2f", c3.make,c3.model,c3.mileage,c3.price);
        }else if (strcmp(c4.make,smake)==0&&smod==c4.model  ){
                printf("\n %s \n %d \n %.2f \n %.2f",c4.make,c4.model,c4.mileage,c4.price);
        }else {
                printf("no car available with this make or model");
        }
```

```
}
main(){
	int smod;
	char smake[20];
	int choice;
	struct car c1={"toyota",2009,97000,25000000};
	struct car c2={"honda",2016,100000,65000000};
	struct car c3={"suzuki",2019,30500,4000000};
	struct car c4={"suzuki",2005,206422,550000};
	struct car c5;
	printf("1.add car\n2.view available cars\n3.search car");
	printf("\nEnter you choice :");
	scanf("%d",&choice);
	if (choice==1){
		printf("enter make:");
		scanf("%s",&c5.make);
		printf("enter model:");
		scanf("%d",&c5.model);
		printf("enter mileage:");
		scanf("%f",&c5.mileage);
		printf("enter price:");
		scanf("%f",&c5.price);
		}
		else if (choice == 2){
			print(c1,c2,c3,c4);
		}else {
			printf("enter the model you want to search:");
			scanf("%d",&smod);
			printf("Enter the make you want to search:");
```

```
                scanf("%s",&smake);
                search(smod,smake,c1,c2,c3,c4);
            }
}
```

Q9)

```
#include <stdio.h>

void sort(char arr[], int l);

int main() {
   int i;
   char arr[10] = {5, 9, 4, 7, 3, 1, 2, 8, 6, 10};
   int l = sizeof(arr) / sizeof(arr[0]);
            sort(arr, l);
   for (i = 0; i < l; i++) {
      printf("%d ", arr[i]);
   }
   return 0;
}


void sort(char arr[], int l) {
   int temp;
   if (l <= 1) {
      return;
   }

   for (int i = 0; i < l - 1; i++) {
      if (arr[i] < arr[i + 1]) {
         temp = arr[i];
         arr[i] = arr[i + 1];
         arr[i + 1] = temp;
```

```
      }
    }



    sort(arr, l - 1);
}
```

Q10)

```
#include<stdio.h>

#include<string.h>

struct package{

	char name[20];

	char destination[30];

	int price;

	int duration;//in days

	int seats;

};

void view_package(struct package p1,struct package p2,struct package p3){

	printf("(1)\nname:%s\ndestination:%s\nprice:%d\nDuration:%d\nAvailable seats:%d",p1.name,p1.destination,p1.price,p1.duration,p1.seats);

	printf("\n");

	printf("(2)\nname:%s\ndestination:%s\nprice:%d\nDuration:%d\nAvailable seats:%d",p2.name,p2.destination,p2.price,p2.duration,p2.seats);

	printf("\n");

	printf("(3)\nname:%s\ndestination:%s\nprice:%d\nDuration:%d\nAvailable seats:%d",p3.name,p3.destination,p3.price,p3.duration,p3.seats);

	printf("\n");

}

void booking(struct package p1,struct package p2,struct package p3,char p_choice[]){

	if (strcmp(p1.name,p_choice)==0){

		if (p1.seats>0){

			printf("Your booking for %s package is done",p1.name);

		}else{

			printf("No booking available for this package. Thankyou!");

		}

	}
```

```
        else if (strcmp(p2.name,p_choice)==0){
                if (p2.seats>0){
                        printf("Your booking for %s package is done",p2.name);
                }else{
                        printf("No booking available for this package. Thankyou!");
                }
        }
        else if (strcmp(p3.name,p_choice)==0){
                if (p3.seats>0){
                        printf("Your booking for %s package is done",p3.name);
                }else{
                        printf("No booking available for this package. Thankyou!");
                }
        }
        else{
                printf("Wrong package");
        }
}
main(){
        struct package p1={"Gold","Maldives",350000,10,12};
        struct package p2={"Silver","USA",1000000,10,13};
        struct package p3={"Bronze","London",9500000,10,26};
        int choice;
        char p_choice[20];
        printf("1.View Packages \n2.Book package");
        printf("\nenter your choice: ");
        scanf("%d",&choice);
        if (choice==1){
                view_package(p1,p2,p3);
```

```
        }else if(choice==2){
                view_package(p1,p2,p3);
                printf("Enter package name:");
                scanf("%s",&p_choice);
                booking(p1,p2,p3,p_choice);
        }

}
```

Q11)

```
#include<stdio.h>
#define CONVERSION 1000
void convert(int l);
main(){
	int l;
	int choice;
	printf("Enter length in meters :");
	scanf("%d",&l);
	convert(l);
	do{
	printf("\nAnother conversion? \n 1.yes \n 2.no \n answer=");
	scanf("%d",&choice);
	if (choice==1){
	printf("\nEnter length in meters :");
	scanf("%d",&l);
	convert(l);
	}else {
		break;
	}
}while(choice==1);



}
void convert(int l){
	static int count;
	int km;
	km=l*CONVERSION;
```

```
        count++;
        printf("%d",km);
        printf("\nconversion done %d times",count);

}
```

Q12)

```
#include <stdio.h>

int linearSearch(int arr[], int size, int target, int index) {
    if (index < size && arr[index] == target) {
        return index;
    }

    if (index >= size) {
        return -1;
    }

    return linearSearch(arr, size, target, index + 1);
}

int main() {
    int size;
    printf("Enter array size: ");
    scanf("%d", &size);

    int arr[size];


    printf("Enter %d elements:\n", size);
    for (int i = 0; i < size; i++) {
        scanf("%d", &arr[i]);
    }

    int target;
```

```
    printf("Enter target element: ");
    scanf("%d", &target);

    int result = linearSearch(arr, size, target, 0);

    if (result != -1) {
        printf("Target %d found at index %d.\n", target, result);
    } else {
        printf("Target %d not found in the array.\n", target);
    }

    return 0;
}
```