CPS LAB 5 KP
(501175325)

Problem 1

```
#include <stdio.h>

int determine_order(int a, int b, int c, int* highest, int* middle, int* lowest){
    if (a >= b && a >= c){
        *highest = a;
        if (b >= c){
            *middle = b;
            *lowest = c;
        }
        if (c >= b){
            *middle = c;
            *lowest = b;
        }
    }
    else if (b >= a && b >= c){
        *highest = b;
        if (a >= c){
            *middle = a;
            *lowest = c;
        }
        if (c >= a){
            *middle = c;
            *lowest = a;
        }
    }
    else if (c >= b && c >= a){
        *highest = c;
        if (a >= b){
            *middle = a;
            *lowest = b;
        }
        if (b >= a){
            *middle = b;
            *lowest = a;
        }
    }
    return 0;
}
```

```
//*The main function asks the user to enter three integers,*//
//*calls the determine_order function to determine their order*//
//*and then prints them out in ascending order*//

int main() {
    int num1, num2, num3, highest, middle, lowest;
    printf("Please enter three integer values: ");

    scanf("%d %d %d", &num1, &num2, &num3);

    determine_order(num1, num2, num3, &highest, &middle, &lowest);

    printf("\n%d %d %d", lowest, middle, highest);

    return 0;
}
```

```
Enter three integer values please: 56 78 23

23 56 78

...Program finished with exit code 0
Press ENTER to exit console.
```

```
Enter three integer values please: 45 -20 22

-20 22 45

...Program finished with exit code 0
Press ENTER to exit console.
```

```
Enter three integer values please: -80 -40 -250

-250 -80 -40

...Program finished with exit code 0
Press ENTER to exit console.
```

```
Enter three integer values please: 8 0 2

0 2 8

...Program finished with exit code 0
Press ENTER to exit console.
```

```
Enter three integer values please: 55 55 55

55 55 55

...Program finished with exit code 0
Press ENTER to exit console.
```

```
Enter three integer values please: 88 77 66

66 77 88

...Program finished with exit code 0
Press ENTER to exit console.
```

```
Enter three integer values please: -8 33 -8

-8 -8 33

...Program finished with exit code 0
Press ENTER to exit console.
```

```
Enter three integer values please: 12 13 1

1 12 13

...Program finished with exit code 0
Press ENTER to exit console.
```

Problem 2

```
#include <stdio.h>

//*Function to calculate the minimum and maximum travel time to the Moon*//
void travelToMoon(int speed, double* minTime, double* maxTime) {
    //*Perigee distance*//
    int moon_perigee = 363104.0;
    double time = moon_perigee / speed;
    *minTime = time;
    //*Apogee distance*//
    int moon_apogee = 405696.0;
    time = moon_apogee / speed;
    *maxTime = time;
}

//*Function to calculate the minimum and maximum travel time to Mars*//
void travelToMars(int speed, double* minTime, double* maxTime) {
    //*Perigee distance*//
    int mars_perigee = 54600000.0;
    double time = mars_perigee / speed;
    *minTime = time;
    //*Apogee distance*//
    int mars_apogee = 401000000.0;
    time = mars_apogee / speed;
    *maxTime = time;
}

//*Function to calculate the minimum and maximum travel time to Venus*//
void travelToVenus(int speed, double* minTime, double* maxTime) {
    //*Perigee distance*//
    int venus_perigee = 38000000.0;
    double time = venus_perigee / speed;
    *minTime = time;
    //*Apogee distance*//
    int venus_apogee = 261000000.0;
    time = venus_apogee / speed;
    *maxTime = time;
}

int main() {
    int choice;
    int speed;
    double minTime, maxTime;
```

```
    do {
        //*Presents the menu options to the user*//
        printf("\nMenu:\n");
        printf("1. Traveling to the Moon\n");
        printf("2. Traveling to Mars\n");
        printf("3. Traveling to Venus\n");
        printf("4. Exit program\n");
        printf("Choose an option: ");
        scanf("%d", &choice);

        switch (choice) {
            case 1:
                printf("Enter the traveling speed (in km/h): ");
                scanf("%d", &speed);
                travelToMoon(speed, &minTime, &maxTime);
                printf("Minimum travel time to the Moon: %.2f hours\n", minTime);
                printf("Maximum travel time to the Moon: %.2f hours\n", maxTime);
                break;
            case 2:
                printf("Enter the traveling speed (in km/h): ");
                scanf("%d", &speed);
                travelToMars(speed, &minTime, &maxTime);
                printf("Minimum travel time to Mars: %.2f hours\n", minTime);
                printf("Maximum travel time to Mars: %.2f hours\n", maxTime);
                break;
            case 3:
                printf("Enter the traveling speed (in km/h): ");
                scanf("%d", &speed);
                travelToVenus(speed, &minTime, &maxTime);
                printf("Minimum travel time to Venus: %.2f hours\n", minTime);
                printf("Maximum travel time to Venus: %.2f hours\n", maxTime);
                break;
            case 4:
                printf("Exiting program...\n");
                break;
            default:
                printf("This choice is invalid!\n");
                break;
        }
    } while (choice != 4);

    return 0;
}
```

```
Menu:
1. Traveling to the Moon
2. Traveling to Mars
3. Traveling to Venus
4. Exit program
Choose an option: 1
Enter the traveling speed (in km/h): 100
Minimum travel time to the Moon: 3631.00 hours
Maximum travel time to the Moon: 4056.00 hours

Menu:
1. Traveling to the Moon
2. Traveling to Mars
3. Traveling to Venus
4. Exit program
Choose an option: 1
Enter the traveling speed (in km/h): 500
Minimum travel time to the Moon: 726.00 hours
Maximum travel time to the Moon: 811.00 hours

Menu:
1. Traveling to the Moon
2. Traveling to Mars
3. Traveling to Venus
4. Exit program
Choose an option: 1
Enter the traveling speed (in km/h): 41000
Minimum travel time to the Moon: 8.00 hours
Maximum travel time to the Moon: 9.00 hours
```

```
Menu:
1. Traveling to the Moon
2. Traveling to Mars
3. Traveling to Venus
4. Exit program
Choose an option: 2
Enter the traveling speed (in km/h): 100
Minimum travel time to Mars: 546000.00 hours
Maximum travel time to Mars: 4010000.00 hours

Menu:
1. Traveling to the Moon
2. Traveling to Mars
3. Traveling to Venus
4. Exit program
Choose an option: 2
Enter the traveling speed (in km/h): 500
Minimum travel time to Mars: 109200.00 hours
Maximum travel time to Mars: 802000.00 hours

Menu:
1. Traveling to the Moon
2. Traveling to Mars
3. Traveling to Venus
4. Exit program
Choose an option: 2
Enter the traveling speed (in km/h): 41000
Minimum travel time to Mars: 1331.00 hours
Maximum travel time to Mars: 9780.00 hours
```

```
Menu:
1. Traveling to the Moon
2. Traveling to Mars
3. Traveling to Venus
4. Exit program
Choose an option: 3
Enter the traveling speed (in km/h): 100
Minimum travel time to Venus: 380000.00 hours
Maximum travel time to Venus: 2610000.00 hours

Menu:
1. Traveling to the Moon
2. Traveling to Mars
3. Traveling to Venus
4. Exit program
Choose an option: 3
Enter the traveling speed (in km/h): 500
Minimum travel time to Venus: 76000.00 hours
Maximum travel time to Venus: 522000.00 hours

Menu:
1. Traveling to the Moon
2. Traveling to Mars
3. Traveling to Venus
4. Exit program
Choose an option: 3
Enter the traveling speed (in km/h): 41000
Minimum travel time to Venus: 926.00 hours
Maximum travel time to Venus: 6365.00 hours

Menu:
1. Traveling to the Moon
2. Traveling to Mars
3. Traveling to Venus
4. Exit program
Choose an option: 4
Exiting program...


...Program finished with exit code 0
Press ENTER to exit console.
```