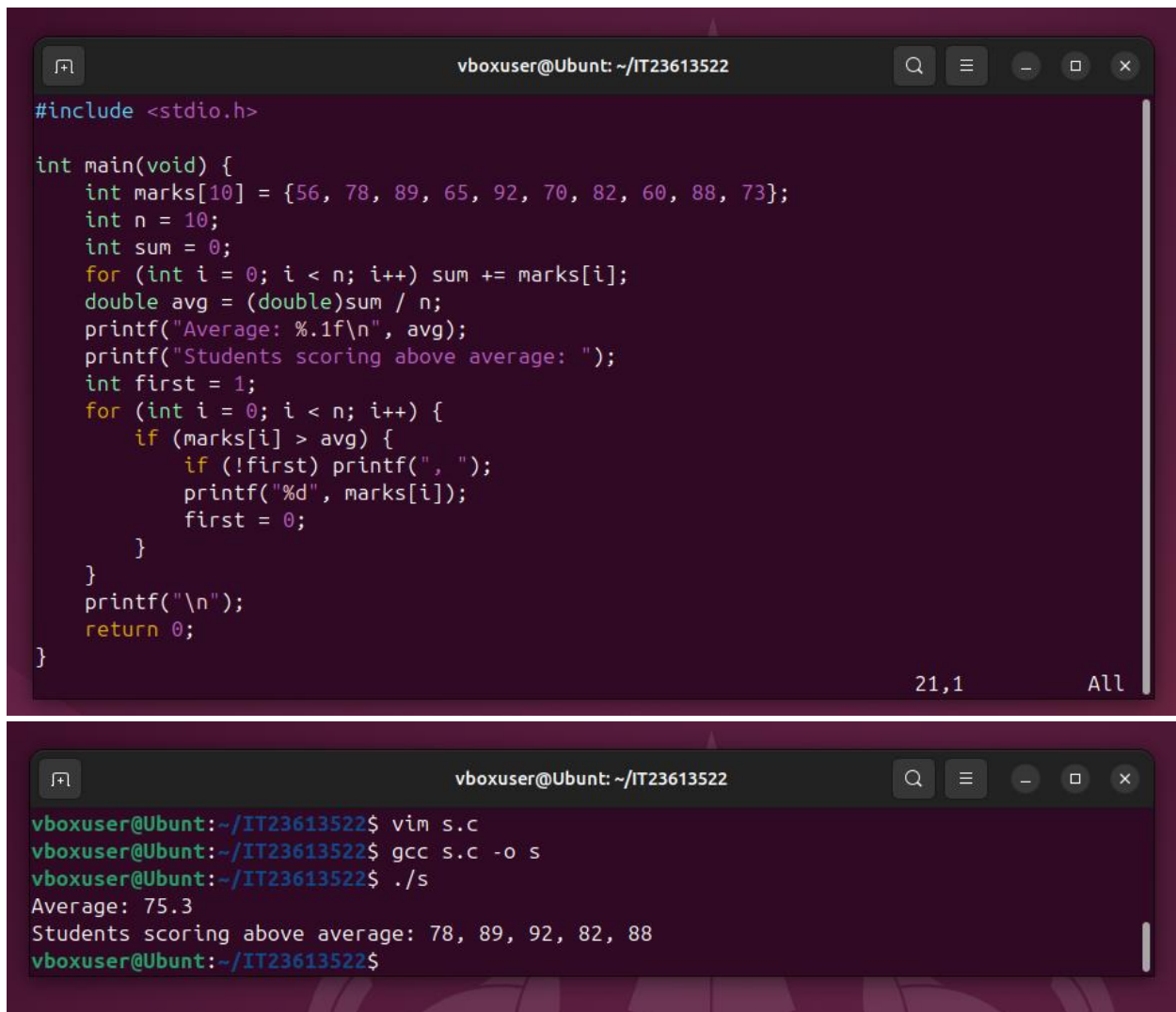


# Programming Methodology - SE1012

## Lab 8

IT23613522

Question 1: Mid-Term Marks Analysis(Statistical Computations)



The image displays two terminal windows from a virtual machine. The top window shows the source code for a C program that calculates the average of 10 marks and lists those above the average. The bottom window shows the execution of this program, resulting in an average of 75.3 and a list of marks above the average: 78, 89, 92, 82, and 88.

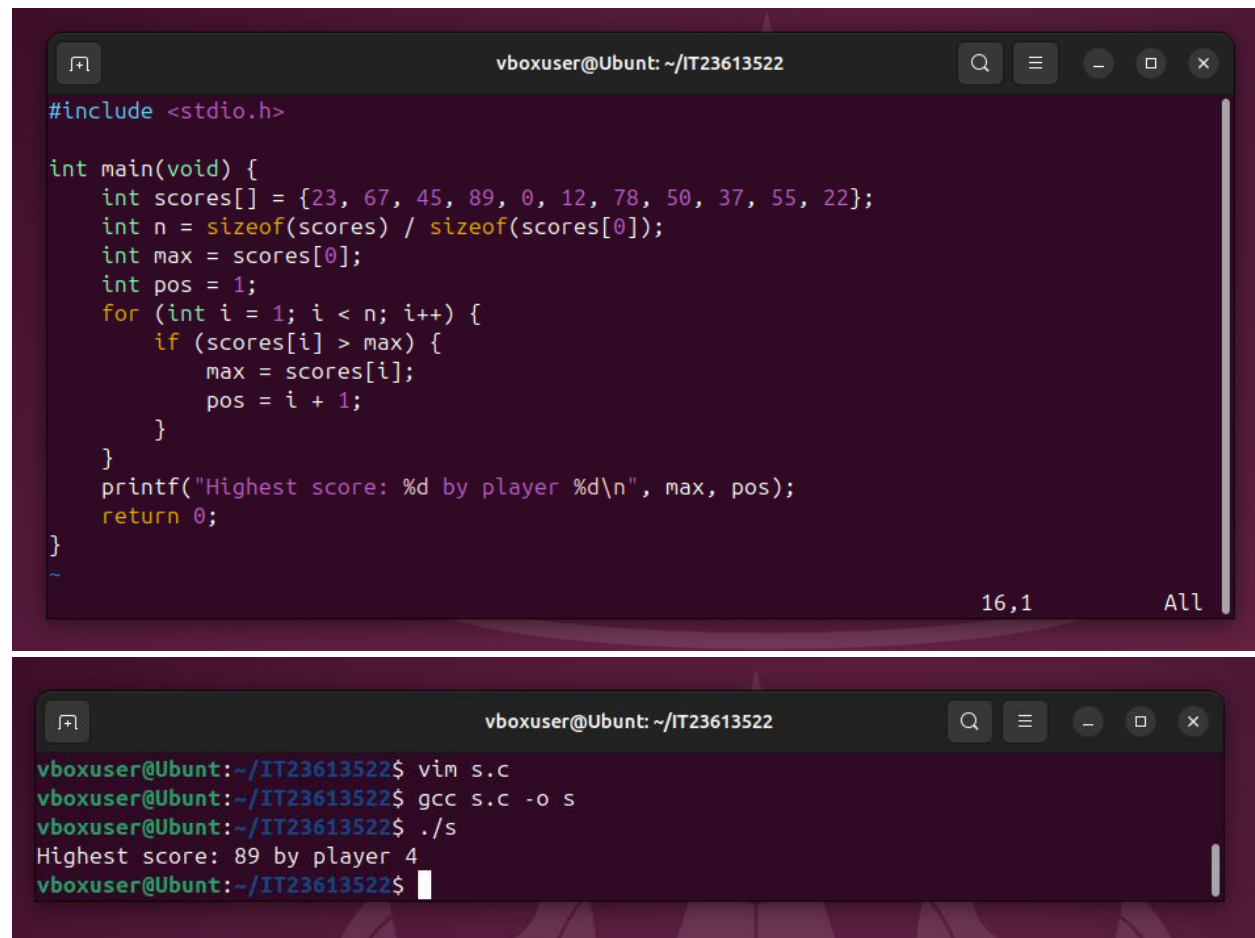
```
vboxuser@Ubunt: ~/IT23613522
#include <stdio.h>

int main(void) {
    int marks[10] = {56, 78, 89, 65, 92, 70, 82, 60, 88, 73};
    int n = 10;
    int sum = 0;
    for (int i = 0; i < n; i++) sum += marks[i];
    double avg = (double)sum / n;
    printf("Average: %.1f\n", avg);
    printf("Students scoring above average: ");
    int first = 1;
    for (int i = 0; i < n; i++) {
        if (marks[i] > avg) {
            if (!first) printf(", ");
            printf("%d", marks[i]);
            first = 0;
        }
    }
    printf("\n");
    return 0;
}
```

21,1 All

```
vboxuser@Ubunt: ~/IT23613522
vboxuser@Ubunt:~/IT23613522$ vim s.c
vboxuser@Ubunt:~/IT23613522$ gcc s.c -o s
vboxuser@Ubunt:~/IT23613522$ ./s
Average: 75.3
Students scoring above average: 78, 89, 92, 82, 88
vboxuser@Ubunt:~/IT23613522$
```

## Question 2: Cricket Match Score Analysis(Statistical and Search Operations)



The image consists of two terminal window screenshots. The top screenshot shows a C program in a text editor. The program defines an array of cricket scores, finds the maximum score, and prints the result along with the player's position. The bottom screenshot shows the program being compiled and executed, resulting in the output: 'Highest score: 89 by player 4'.

```
vboxuser@Ubunt: ~/IT23613522
#include <stdio.h>

int main(void) {
    int scores[] = {23, 67, 45, 89, 0, 12, 78, 50, 37, 55, 22};
    int n = sizeof(scores) / sizeof(scores[0]);
    int max = scores[0];
    int pos = 1;
    for (int i = 1; i < n; i++) {
        if (scores[i] > max) {
            max = scores[i];
            pos = i + 1;
        }
    }
    printf("Highest score: %d by player %d\n", max, pos);
    return 0;
}
```

```
vboxuser@Ubunt: ~/IT23613522
vboxuser@Ubunt:~/IT23613522$ vim s.c
vboxuser@Ubunt:~/IT23613522$ gcc s.c -o s
vboxuser@Ubunt:~/IT23613522$ ./s
Highest score: 89 by player 4
vboxuser@Ubunt:~/IT23613522$
```

## Question 3: Presidential Elections Voting Analysis

```
vboxuser@Ubunt: ~/IT23613522
#include <stdio.h>

int main(void) {
    int votes[5] = {1200, 1800, 2300, 900, 1500};
    int idx[5] = {1, 2, 3, 4, 5};
    int n = 5;
    for (int i = 0; i < n - 1; i++) {
        int min = i;
        for (int j = i + 1; j < n; j++) {
            if (votes[j] < votes[min]) min = j;
        }
        if (min != i) {
            int t = votes[i];
            votes[i] = votes[min];
            votes[min] = t;
            int ti = idx[i];
            idx[i] = idx[min];
            idx[min] = ti;
        }
    }
    printf("Sorted votes: ");
    for (int i = 0; i < n; i++) {
        if (i) printf(", ");
        printf("%d", votes[i]);
    }
    printf("\n");
    int winner_pos = idx[n-1];
    int winner_votes = votes[n-1];
    printf("Candidate %d wins with %d votes.\n", winner_pos, winner_votes);
    return 0;
}
```

27,1 All

```
vboxuser@Ubunt:~/IT23613522$ vim s.c
vboxuser@Ubunt:~/IT23613522$ gcc s.c -o s
vboxuser@Ubunt:~/IT23613522$ ./s
Sorted votes: 900, 1200, 1500, 1800, 2300
Candidate 3 wins with 2300 votes.
vboxuser@Ubunt:~/IT23613522$
```

Question 4: Temperature Variation Over a Week

```
vboxuser@Ubuntu: ~/IT23613522
#include <stdio.h>

void find_extremes(int temps[], int n, int *max_idx, int *min_idx) {
    *max_idx = 0;
    *min_idx = 0;
    for (int i = 1; i < n; i++) {
        if (temps[i] > temps[*max_idx]) *max_idx = i;
        if (temps[i] < temps[*min_idx]) *min_idx = i;
    }
}

int main(void) {
    int temps[7] = {22, 25, 20, 30, 28, 24, 26};
    int max_idx, min_idx;
    find_extremes(temps, 7, &max_idx, &min_idx);
    printf("Hottest day: Day %d with %d degrees.\n", max_idx + 1, temps[max_idx]);
    printf("Coldest day: Day %d with %d degrees.\n", min_idx + 1, temps[min_idx]);
    return 0;
}
```

```
vboxuser@Ubuntu: ~/IT23613522
vboxuser@Ubuntu:~/IT23613522$ vim s.c
vboxuser@Ubuntu:~/IT23613522$ gcc s.c -o s
vboxuser@Ubuntu:~/IT23613522$ ./s
Hottest day: Day 4 with 30 degrees.
Coldest day: Day 3 with 20 degrees.
vboxuser@Ubuntu:~/IT23613522$
```

## Question 5: Rainfall Data Analysis

```
vboxuser@Ubuntu: ~/IT23613522
vboxuser@Ubuntu:~/IT23613522$ vim s.c
vboxuser@Ubuntu:~/IT23613522$ gcc s.c -o s
vboxuser@Ubuntu:~/IT23613522$ ./s
Week 1 total: 17 mm
Week 2 total: 29 mm
Week 3 total: 20 mm
Week 4 total: 26 mm
Overall average: 23 mm
vboxuser@Ubuntu:~/IT23613522$
```

```
vboxuser@Ubuntu: ~/IT23613522
#include <stdio.h>

int main(void) {
    int weeks[4][7] = {
        {3, 0, 5, 2, 0, 1, 6},
        {7, 0, 3, 4, 2, 8, 5},
        {2, 1, 5, 3, 0, 2, 7},
        {6, 0, 8, 2, 3, 0, 7}
    };
    int total = 0;
    for (int i = 0; i < 4; i++) {
        int week_sum = 0;
        for (int j = 0; j < 7; j++) week_sum += weeks[i][j];
        printf("Week %d total: %d mm\n", i + 1, week_sum);
        total += week_sum;
    }
    int overall_avg = total / 4;
    printf("Overall average: %d mm\n", overall_avg);
    return 0;
}
```

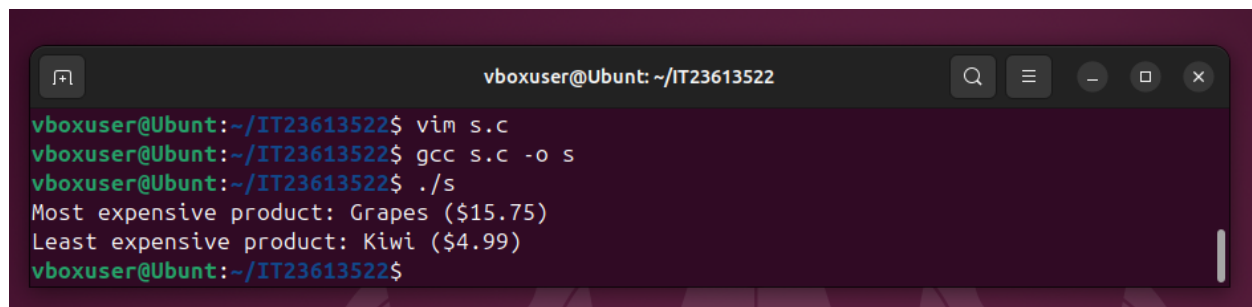
20,1 All

## Question 6: Product Prices Inventory

```
vboxuser@Ubuntu: ~/IT23613522
#include <stdio.h>

int main(void) {
    const char *names[10] = {"Apple", "Banana", "Orange", "Mango", "Grapes", "Peach", "Plum", "P
ear", "Lemon", "Kiwi"};
    double prices[10] = {5.99, 12.50, 7.25, 10.00, 15.75, 9.99, 8.30, 6.50, 11.40, 4.99};
    int n = 10;
    int max_idx = 0;
    int min_idx = 0;
    for (int i = 1; i < n; i++) {
        if (prices[i] > prices[max_idx]) max_idx = i;
        if (prices[i] < prices[min_idx]) min_idx = i;
    }
    printf("Most expensive product: %s ($%.2f)\n", names[max_idx], prices[max_idx]);
    printf("Least expensive product: %s ($%.2f)\n", names[min_idx], prices[min_idx]);
    return 0;
}
```

16,1 All



A terminal window with a dark purple background and a lighter purple title bar. The title bar contains the text 'vboxuser@Ubunt: ~/IT23613522' and standard window control icons (search, menu, zoom, and close). The terminal shows a series of commands and their output:

```
vboxuser@Ubunt:~/IT23613522$ vim s.c
vboxuser@Ubunt:~/IT23613522$ gcc s.c -o s
vboxuser@Ubunt:~/IT23613522$ ./s
Most expensive product: Grapes ($15.75)
Least expensive product: Kiwi ($4.99)
vboxuser@Ubunt:~/IT23613522$
```