Exam: C Programming lab exam

Submitted By: Tanmay Vig

Roll No: 19BCS061

Ans1:

Source Code:

```c
#include <stdio.h>
int main() {
    int matrix[4][4],i,j;
    printf("Enter values of 4x4 matrix\n");
    for (i = 0; i < 4; ++i) {
        for (j = 0; j < 4; ++j) scanf("%d", &matrix[i][j]);
    }


    int sum = 0;
    for (i = 0; i < 4; ++i) sum += matrix[i][i];


    printf("The principal sum is: %d", sum);
    return 0;
}
```
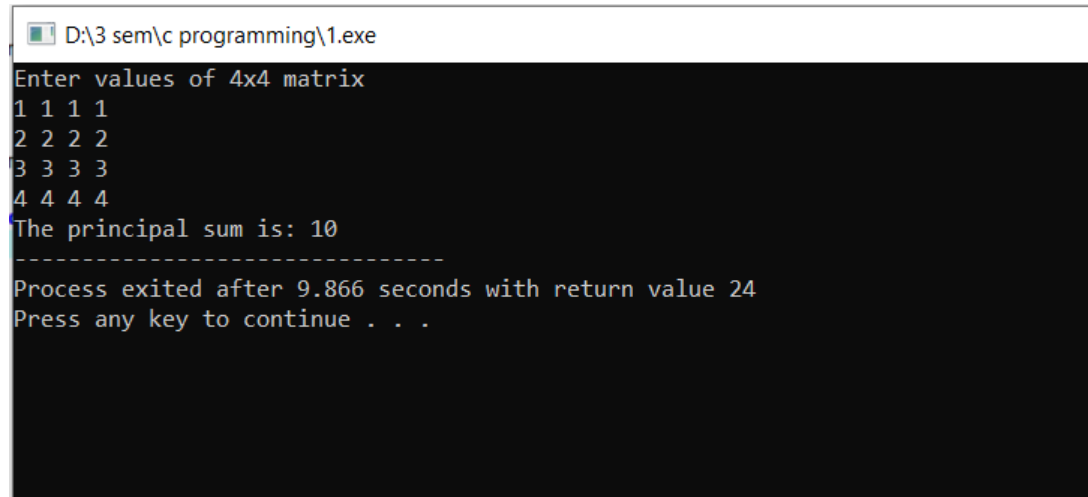
Output:


```
D:\3 sem\c programming\1.exe

Enter values of 4x4 matrix
1 1 1 1
2 2 2 2
3 3 3 3
4 4 4 4
The principal sum is: 10
------------------------------
Process exited after 9.866 seconds with return value 24
Press any key to continue . . .
```


Ans2:

Source Code:

```c
#include <stdio.h>
#include <stdlib.h>
int main() {
        char *S = malloc(100*sizeof(char));
        printf("Enter the line of text\n");
        gets(S);
        int cv=0, cc=0, cd=0, cs=0, co=0;
        int i=0;
        while(*(S+i)!='\0') {
                char c = *(S+i);
                if((c>='a' && c<='z') || (c>='A' && c<='Z')) {
                        if(c=='a' || c=='e' || c=='i' || c=='o' || c=='u' || c=='A' || c=='E' || c=='I' || c=='O' || c=='U') {
                                cv++;
                        } else {
                                cc++;
                        }
                } else if(c>='0' && c<='9') {
                        cd++;
                } else if(c == ' ') {
                        cs++;
                } else {
                        co++;
                }
                i++;
        }
        printf("Number of vowels: %d\n", cv);
        printf("Number of consonants: %d\n", cc);
        printf("Number of digits: %d\n", cd);
        printf("Number of white spaces: %d\n", cs);
        printf("Number of other characters: %d\n", co);
        return 0;
```
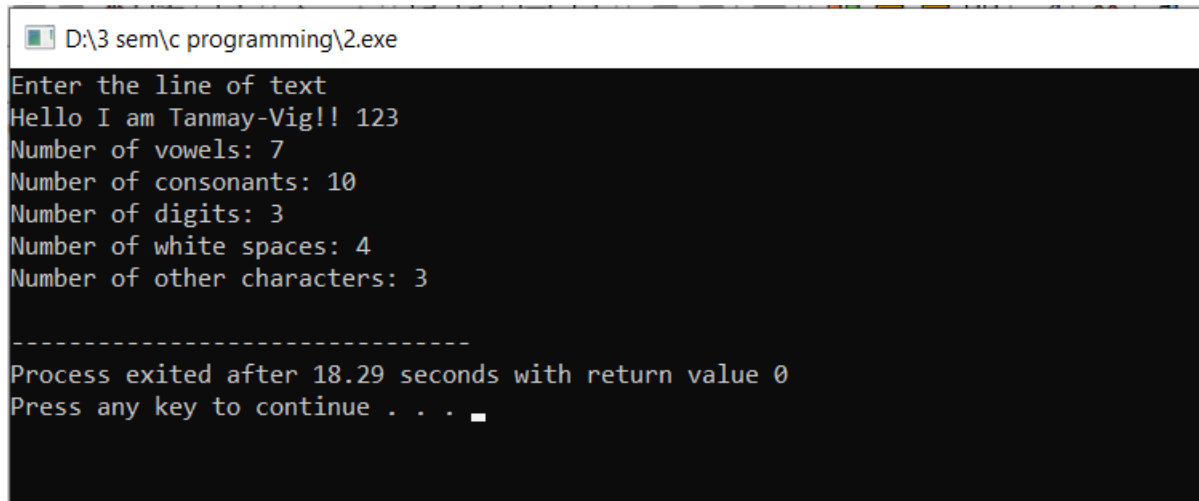
}

Output:


```
D:\3 sem\c programming\2.exe

Enter the line of text
Hello I am Tanmay-Vig!! 123
Number of vowels: 7
Number of consonants: 10
Number of digits: 3
Number of white spaces: 4
Number of other characters: 3


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Process exited after 18.29 seconds with return value 0
Press any key to continue . . .
```