Q1 :


```c
#include <stdio.h>
#include <string.h>
int noOfVowels(char[]);
int noOfConsonants(char[]);
int noOfSpaces(char[]);
int noOfDigits(char[]);

void main()
{
    int ch;
    printf("\nEnter Your String:\n");
    char str[250];
    fflush(stdin);
    // scanf("%s", &str);
    gets(str);
    printf("\nLength : %d", strlen(str));
    do
    {
        printf("\nEnter Your Choice :\n1)Count The No of Vowels. \t2)Count No of
Consonants \n3)No of Spaces \t4)No of Digits in String: \n");
        scanf("%d", &ch);
        switch (ch)
        {
        case 1:
            printf("\nNo of vowels in string are: %d", noOfVowels(str));
            break;
        case 2:
            printf("\nNo of Consonants in string are: %d", noOfConsonants(str));
            break;
```

```c
            case 3:
                printf("\nNo of Spaces in string are: %d", noOfSpaces(str));
                break;
            case 4:
                printf("\nNo of Digits in string are: %d", noOfDigits(str));
                break;
            case 0:
                printf("\nExiting..");
                break;
            default:
                printf("\nInvalid Choice!!");
                break;
        }
    } while (ch != 0);
}
int noOfVowels(char str[])
{
    int cnt = 0;
    for (int i = 0; str[i] != '\0'; i++)
    {
        if (str[i] == 'a' || str[i] == 'e' || str[i] == 'i' || str[i] == 'o' || str[i] ==
'u' || str[i] == 'A' || str[i] == 'E' || str[i] == 'I' || str[i] == 'O' || str[i] == 'U')
        {
            cnt++;
        }
    }
    return cnt;
}

int noOfConsonants(char str[])
{
    int cnt = 0;
    for (int i = 0; str[i] != '\0'; i++)
    {
        // if ((str[i] != 'a' || str[i] != 'e' || str[i] != 'i' || str[i] != 'o' || str[i]
!= 'u' || str[i] != 'A' || str[i] != 'E' || str[i] != 'I' || str[i] != 'O' || str[i] !=
'U'))
        if (str[i] == 'a' || str[i] == 'e' || str[i] == 'i' || str[i] == 'o' || str[i] ==
'u' || str[i] == 'A' || str[i] == 'E' || str[i] == 'I' || str[i] == 'O' || str[i] == 'U')
        {
            continue;
        }
        else if ((str[i] >= '0' && str[i] <= '9') == 0 && str[i] != ' ')
        {
            cnt++;
        }
    }
    return cnt;
}

int noOfSpaces(char str[])
{
    int cnt = 0;
```

```c
    for (int i = 0; str[i] != '\0'; i++)
    {
        if (str[i] == ' ')
        {
            cnt++;
        }
    }
    return cnt;
}
int noOfDigits(char str[])
{
    int cnt = 0;
    // int len = strlen(str);
    for (int i = 0; str[i] != '\0'; i++)
    // for (int i = 0; i <= len; i++)
    {
        if (str[i] >= '0' && str[i] <= '9')
        {
            cnt++;
        }
    }
    return cnt;
}
```

C:\Users\bhagv\Desktop> cmd /C "c:\Users\bhagv\.vscode\extensions\ms-vscode.cpptools-1.21.6-win32-x64\debugAdapters\bin\WindowsDebugLauncher.exe --stdin=Microsoft-MIEngine-In-h3f02afo.fvu --stdout=Microsoft-MIEngine-Out-xtoqcsqi.bjj --stderr=Microsoft-MIEngine-Error-k21dtizd.1n4 --pid=Microsoft-MIEngine-Pid-fpx0dixz.t30 --dbgExe=C:\TDM-GCC-64\bin\gdb.exe --interpreter=mi "

Enter Your String:

Hello I am Bhagvat Mutthe Roll no 96 My contact no is 8408921072

Length : 64

Enter Your Choice :

1)Count The No of Vowels.   2)Count No of Consonants

3)No of Spaces 4)No of Digits in String:

1

No of vowels in string are: 14

Enter Your Choice :

1)Count The No of Vowels.   2)Count No of Consonants

3)No of Spaces 4)No of Digits in String:

2

No of Consonants in string are: 26

Enter Your Choice :

1)Count The No of Vowels.   2)Count No of Consonants

3)No of Spaces 4)No of Digits in String:

3

No of Spaces in string are: 12

Enter Your Choice :

1)Count The No of Vowels.   2)Count No of Consonants

3)No of Spaces 4)No of Digits in String:

4

No of Digits in string are: 12

Enter Your Choice :

1)Count The No of Vowels.   2)Count No of Consonants

3)No of Spaces 4)No of Digits in String:

5

Invalid Choice!!

Enter Your Choice :

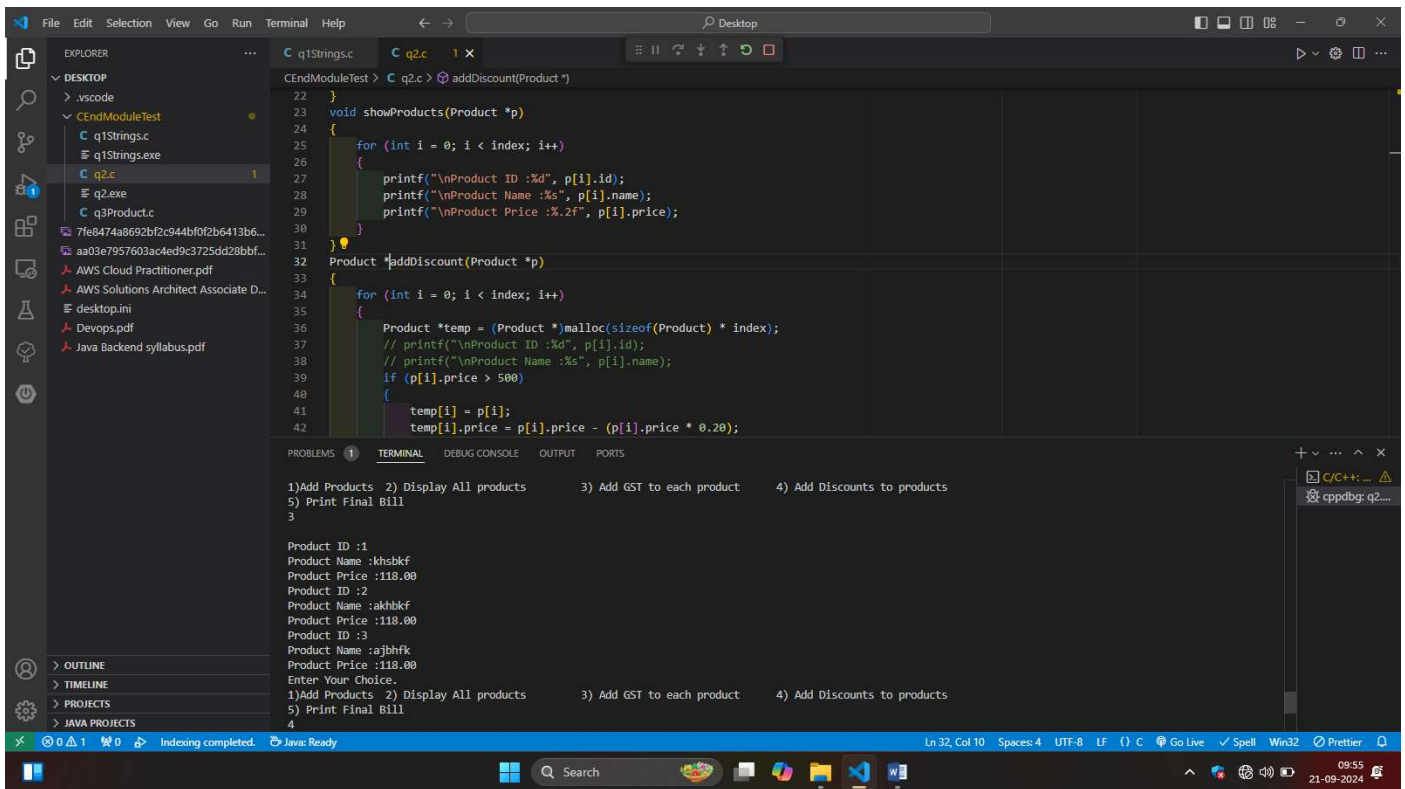1)Count The No of Vowels.   2)Count No of Consonants

3)No of Spaces 4)No of Digits in String:

0

Exiting..

C:\Users\bhagv\Desktop>

Q3

```c
#include <stdio.h>
#include <stdlib.h>
int size = 5, index = 0;
typedef struct Product
{
    int id;
    char name[20];
    float price;
} Product;
void getProducts(Product *p, int usize)
{
    for (int i = 0; i < usize; i++, index++)
    {
        printf("\nEnter Product ID :");
        scanf("%d", &p[index].id);
        printf("\nEnter Product Name :");
        fflush(stdin);
        gets(p[index].name);
        printf("\nEnter Product Price :");
        scanf("%f", &p[index].price);
    }
}
void showProducts(Product *p)
{
    for (int i = 0; i < index; i++)
    {
        printf("\nProduct ID :%d", p[i].id);
        printf("\nProduct Name :%s", p[i].name);
        printf("\nProduct Price :%.2f", p[i].price);
    }
```

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```c
}
Product *addDiscount(Product *p)
{
    Product *tempd = (Product *)malloc(sizeof(Product) * index);

    for (int i = 0; i < index; i++)
        tempd[i] = p[i];

    for (int i = 0; i < index; i++)
    {

        if (p[i].price > 500)
        {
            tempd[i].price = p[i].price - (p[i].price * 0.20);
            // printf("\nProduct Price With Discount 20%% is:%.2f", p[i].price);
        }

        return tempd;
    }
}

Product *addGST(Product *p)
{
    Product *temp = (Product *)malloc(sizeof(Product) * index);

    for (int i = 0; i < index; i++)
    {
        temp[i] = p[i];
        temp[i].price = p[i].price + (p[i].price * 0.18);
    }
    return temp;
}
void displayBill(Product *p)
{
    Product *temp;
    temp = addGST(p);
    for (int i = 0; i < index; i++)
        p[i] = temp[i];

    temp = addDiscount(p);
    for (int i = 0; i < index; i++)
        p[i] = temp[i];

    float totalAmount;
    printf("\n\tFinal Bill :");
    for (int i = 0; i < index; i++)
    {
        printf("\nProduct %d", i + 1);
        printf("\nProduct ID :%d", p[i].id);
        printf("\nProduct Name :%s", p[i].name);
        printf("\nProduct Price :%.2f", p[i].price);
        totalAmount += p[i].price;
    }
```

```c
        printf("\n\tTotal Bill : %.4f\n", totalAmount);
}
void main()
{
    int sUser;
    Product *prod = (Product *)malloc(sizeof(Product) * size);
    int ch;
    do
    {
        Product *temp;
        printf("\nEnter Your Choice.\n1)Add Products \t2) Display All products \t3) Add
GST to each product \t4) Add Discounts to products \n5) Print Final Bill\n");
        scanf("%d", &ch);
        switch (ch)
        {
        case 1:
            printf("\nEnter How many products do you want to add : ");
            scanf("%d", &sUser);
            if (sUser > size)
            {
                size = sUser;
                temp = (Product *)realloc(prod, sizeof(Product) * size);
                if (temp == NULL)
                {
                    printf("\n\nReallocation Failed");
                    return; /* code */
                }
                else
                {
                    prod = temp;
                }
            }

            getProducts(prod, sUser);
            break;
        case 2:
            showProducts(prod);
            break;
        case 3:
            temp = addGST(prod);
            showProducts(temp);
            // free(temp);
            break;
        case 4:
            temp = addDiscount(prod);
            showProducts(temp);
            //
            break;
        case 5:
            displayBill(prod);
            break;
        case 0:
            printf("\nExiting....");
```

```
            free(temp);
            free(prod);
            break;
        default:
            printf("\nInvalid Choice!!");
            break;
        }
    } while (ch != 0);
}
```

C:\Users\bhagv\Desktop> cmd /C "c:\Users\bhagv\.vscode\extensions\ms-vscode.cpptools-1.21.6-win32-x64\debugAdapters\bin\WindowsDebugLauncher.exe --stdin=Microsoft-MIEngine-In-gno4ojy2.jha --stdout=Microsoft-MIEngine-Out-auv1skpr.rum --stderr=Microsoft-MIEngine-Error-fdk4whzg.pij --pid=Microsoft-MIEngine-Pid-pwljhank.bwf --dbgExe=C:\TDM-GCC-64\bin\gdb.exe --interpreter=mi "

Enter Your Choice.

1)Add Products 2) Display All products   3) Add GST to each product   4) Add Discounts to products

5) Print Final Bill

1

Enter How many products do you want to add : 3

Enter Product ID :1

Enter Product Name :kabfj

Enter Product Price :100

Enter Product ID :2

Enter Product Name :ajfha

Enter Product Price :700

Enter Product ID :3

Enter Product Name :jhaejha

Enter Product Price :550

Enter Your Choice.

1)Add Products 2) Display All products   3) Add GST to each product   4) Add Discounts to products

5) Print Final Bill

2

Product ID :1

Product Name :kabfj

Product Price :100.00

Product ID :2

Product Name :ajfha

Product Price :700.00

Product ID :3

Product Name :jhaejha

Product Price :550.00

Enter Your Choice.

1)Add Products 2) Display All products   3) Add GST to each product   4) Add Discounts to products

5) Print Final Bill

3

Product ID :1

Product Name :kabfj

Product Price :118.00

Product ID :2

Product Name :ajfha

Product Price :826.00

Product ID :3

Product Name :jhaejha

Product Price :649.00

Enter Your Choice.

1)Add Products 2) Display All products   3) Add GST to each product   4) Add Discounts to products

5) Print Final Bill

4

Product ID :1

Product Name :kabfj

Product Price :100.00

Product ID :2

Product Name :ajfha

Product Price :700.00

Product ID :3

Product Name :jhaejha

Product Price :550.00

Enter Your Choice.

1)Add Products 2) Display All products   3) Add GST to each product   4) Add Discounts to products

5) Print Final Bill

5

     Final Bill :

Product 1

Product ID :1

Product Name :kabfj

Product Price :118.00

Product 2

Product ID :2

Product Name :ajfha

Product Price :826.00

Product 3

Product ID :3

Product Name :jhaejha

Product Price :649.00

     Total Bill : 1593.0000

Enter Your Choice.

1)Add Products 2) Display All products   3) Add GST to each product   4) Add Discounts to products
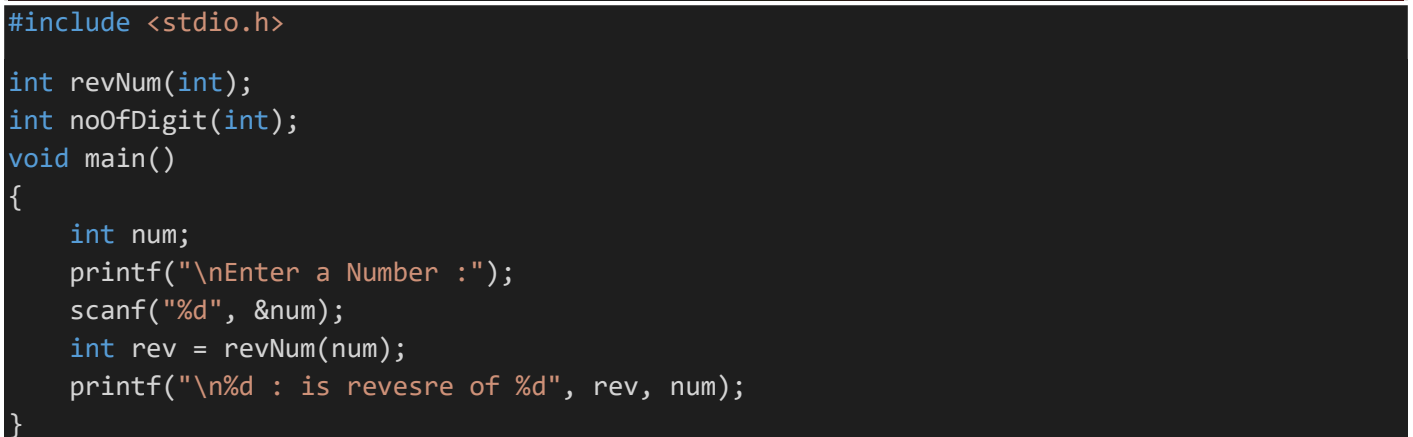
5) Print Final Bill

6

Invalid Choice!!

Enter Your Choice.

1)Add Products 2) Display All products   3) Add GST to each product   4) Add Discounts to products

5) Print Final Bill

0

Exiting....

C:\Users\bhagv\Desktop>

Q2:


```c
#include <stdio.h>

int revNum(int);
int noOfDigit(int);
void main()
{
    int num;
    printf("\nEnter a Number :");
    scanf("%d", &num);
    int rev = revNum(num);
    printf("\n%d : is revesre of %d", rev, num);
}
```

```c
int revNum(int num)
{
    int rev = 0;
    // while (num)
    // {
    //      rev = (rev * 10) + (num % 10);
    //      num = num / 10;

    //      rev = (rev * 10) + revNum(num);

    //      return rev;
    // }

    int numlen = noOfDigit(num);
    while (numlen)
    {
        rev = (rev * 10) + (num % 10);
        num /= 10;
        numlen--;
    }
    return rev;
}

int noOfDigit(int num)
{
    int cnt = 0;
    while (num != 0)
    {
        num /= 10;
        cnt++;
    }
    return cnt;
}
```