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Section: F

Q1. Write a C++ program to take the month in number and print the name of the month.

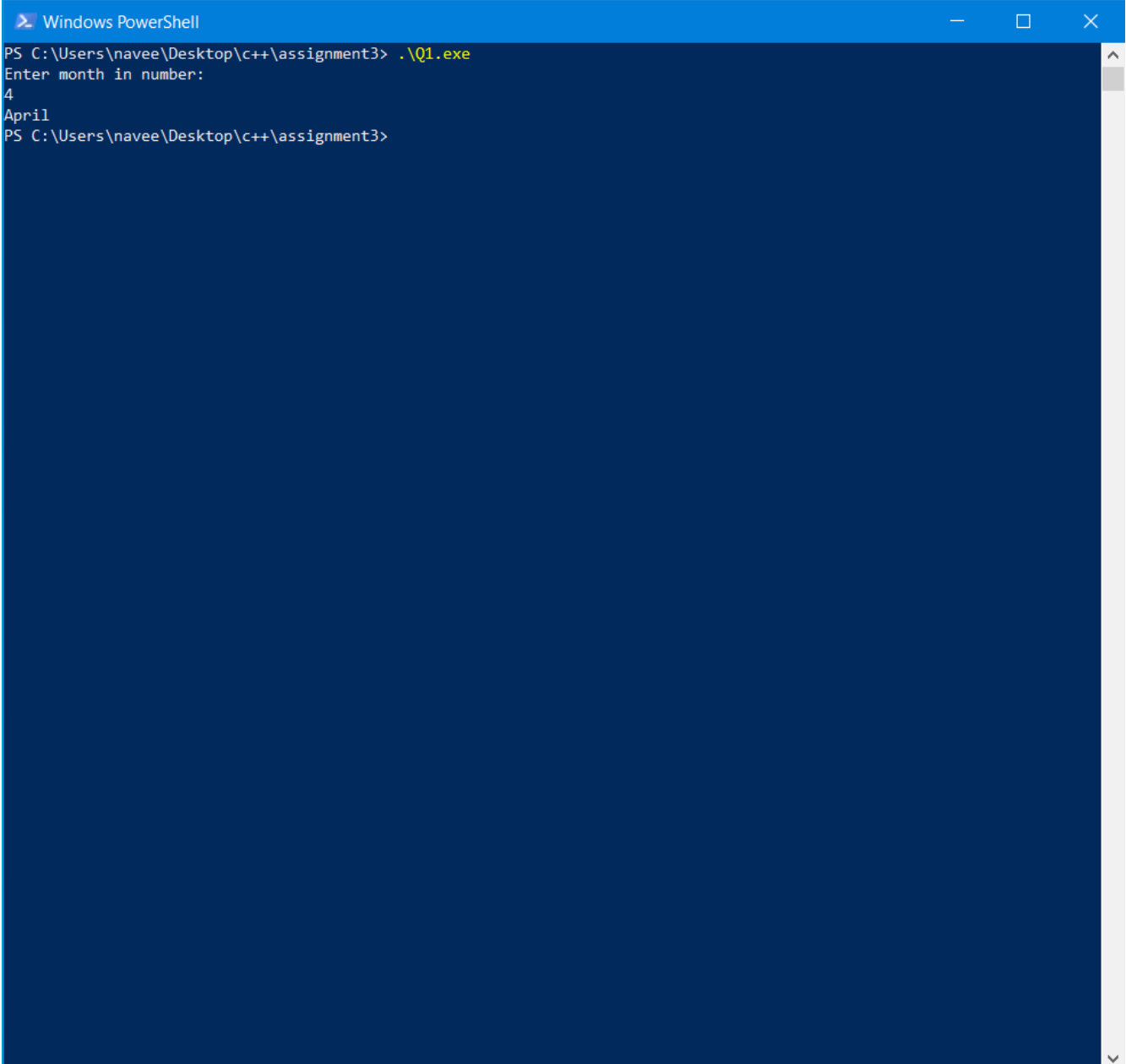
Code:

```
//862041_Naveen Kumar Tyagi
#include<iostream>
using namespace std;
int main(){
    int num; //declaration of variable that will be used to store month number

    cout<<"Enter month in number: "<<endl;
    cin>>num; // store entered number in num

    //switch statement to print month name corresponding to number
    switch(num){
        case 1:cout<<"January";
        break;
        case 2:cout<<"February";
        break;
        case 3:cout<<"March";
        break;
        case 4:cout<<"April";
        break;
        case 5:cout<<"May";
        break;
        case 6:cout<<"June";
        break;
        case 7:cout<<"July";
        break;
        case 8:cout<<"August";
        break;
        case 9:cout<<"September";
        break;
        case 10:cout<<"October";
        break;
        case 11:cout<<"November";
        break;
        case 12:cout<<"December";
        break;
    }
    return 0;
}
```

Output:

A screenshot of a Windows PowerShell window. The title bar is blue and contains the text "Windows PowerShell" along with standard window control buttons (minimize, maximize, close). The main area has a dark blue background with white text. The text shows the command prompt path "PS C:\Users\navee\Desktop\c++\assignment3>" followed by the command ".\Q1.exe" in yellow. Below this, the program prompts "Enter month in number:" and the user enters "4". The program then outputs "April". Finally, the command prompt returns to "PS C:\Users\navee\Desktop\c++\assignment3>". A vertical scrollbar is visible on the right side of the window.

```
Windows PowerShell
PS C:\Users\navee\Desktop\c++\assignment3> .\Q1.exe
Enter month in number:
4
April
PS C:\Users\navee\Desktop\c++\assignment3>
```

Q2. Any character is entered through the keyboard, write a program to determine whether the character entered is a capital letter, a small case letter, a digit or a special symbol.

The following table shows the range of ASCII values for various characters.

A - Z = 65 -90

a - z = 97 - 122

0 - 9 = 48 - 57

special symbols = 0 - 47, 58 - 64, 91 - 96, 123 - 127

Code:

```
//862041_Naveen Kumar Tyagi
```

```
#include<iostream>
```

```
using namespace std;
```

```
int main (){
```

```
    char ch; //declaration of variable ch with datatype character
```

```
    cout<<"Enter any character:";
```

```
    cin>>ch; //store entered value in ch
```

```
    //if statement to tell entered character is a special symbol
```

```
    if ((ch>0 && ch<=47)|| (ch>=58 && ch<=64)|| (ch>=91 && ch<=96)|| (ch>=123 && ch<=127)){  
        cout<<"\nCharacter is a special symbol";  
    }
```

```
    // else if statement to tell entered Character is a digit
```

```
    else if (ch>=48 && ch<=57){  
        cout<<"\nCharacter is a digit";  
    }
```

```
    // else if statement to tell entered Character is a capital letter
```

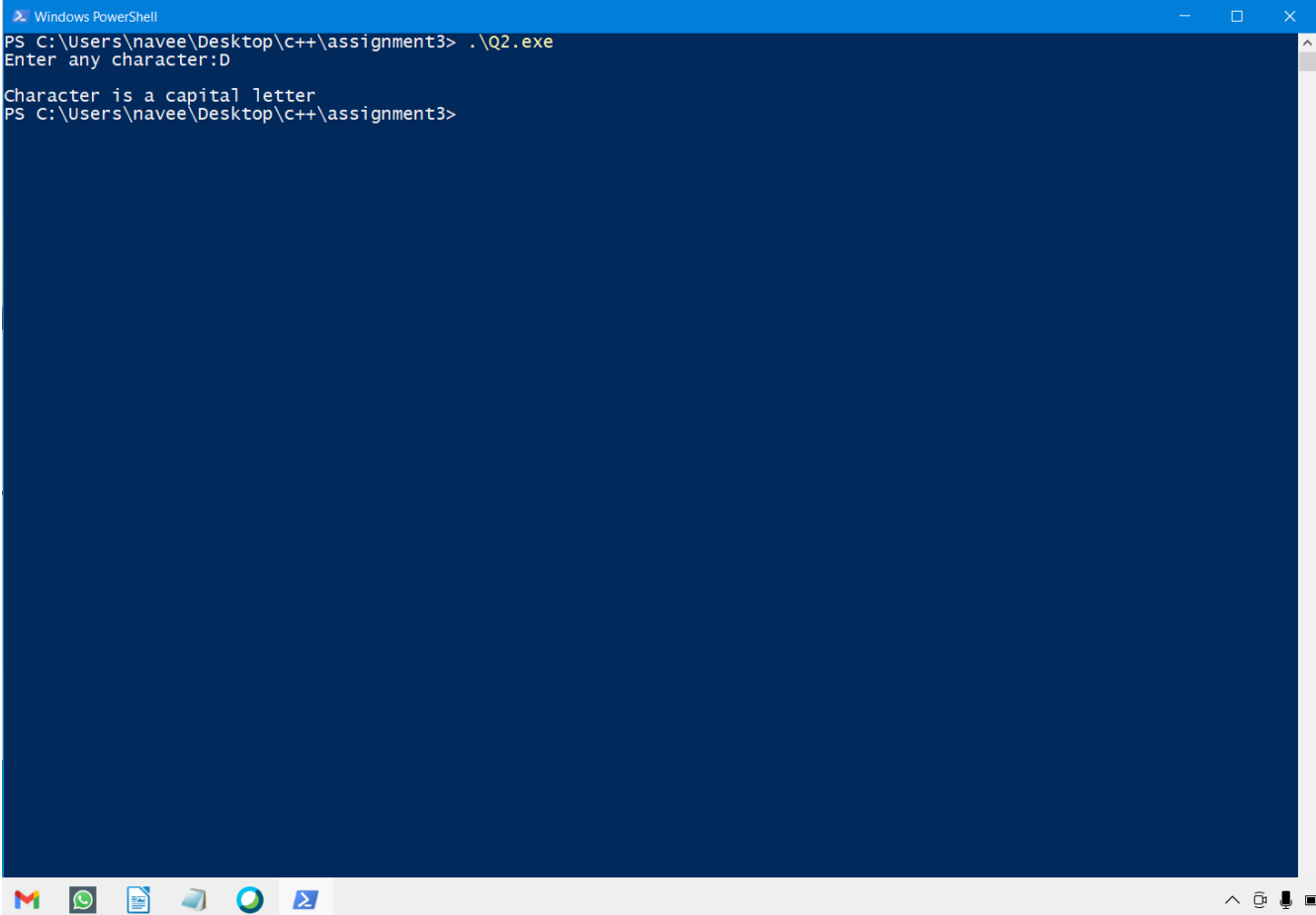
```
        else if (ch>=65 && ch<=90){  
            cout<<"\nCharacter is a capital letter";  
        }
```

```
    // else if statement to tell entered Character is a small letter
```

```
        else if (ch>=97 && ch<=122){  
            cout<<"\nCharacter is a small letter";  
        }
```

```
    return 0;  
}
```

Output:



The screenshot shows a Windows PowerShell terminal window with a blue title bar and a dark blue background. The window title is "Windows PowerShell". The command prompt shows the following sequence of text:

```
PS C:\Users\navsee\Desktop\c++\assignment3> .\Q2.exe  
Enter any character:D  
  
Character is a capital letter  
PS C:\Users\navsee\Desktop\c++\assignment3>
```

The taskbar at the bottom of the screen shows several icons: Google Chrome, WhatsApp, a document icon, a folder icon, a globe icon, and a blue icon with a white 'X'. The system tray on the right side of the taskbar shows icons for network, volume, and battery.

Q3. A certain grade of steel is graded according to the following conditions:

- (i) Hardness must be greater than 50
- (ii) Carbon content must be less than 0.7
- (iii) Tensile strength must be greater than 5600

The grades are as follows:

Grade is 10 if all three conditions are met

Grade is 9 if conditions (i) and (ii) are met

Grade is 8 if conditions (ii) and (iii) are met

Grade is 7 if conditions (i) and (iii) are met

Grade is 6 if only one condition is met

Grade is 5 if none of the conditions are met

Write a program, which will require the user to give values of hardness, carbon content and tensile strength of the steel under consideration and output the grade of the steel

Code:

```
//862041_Naveen Kumar Tyagi
#include<iostream>
using namespace std;
int main(){
    float hardness,c_content,ten_str; //declaration of required variables in this context
    cout<<"This program is to determine grade of steel.";
    cout<<"\nEnter hardness: ";
    cin>>hardness;           //store steel hardness in var. hardness

    cout<<"\nEnter carbon content: ";
    cin>>c_content;           //store steel carbon content in var. c_content
```

```
cout<<"\nEnter tensile strength: ";  
cin>>ten_str;          //store steel tensile strength in var. ten_str
```

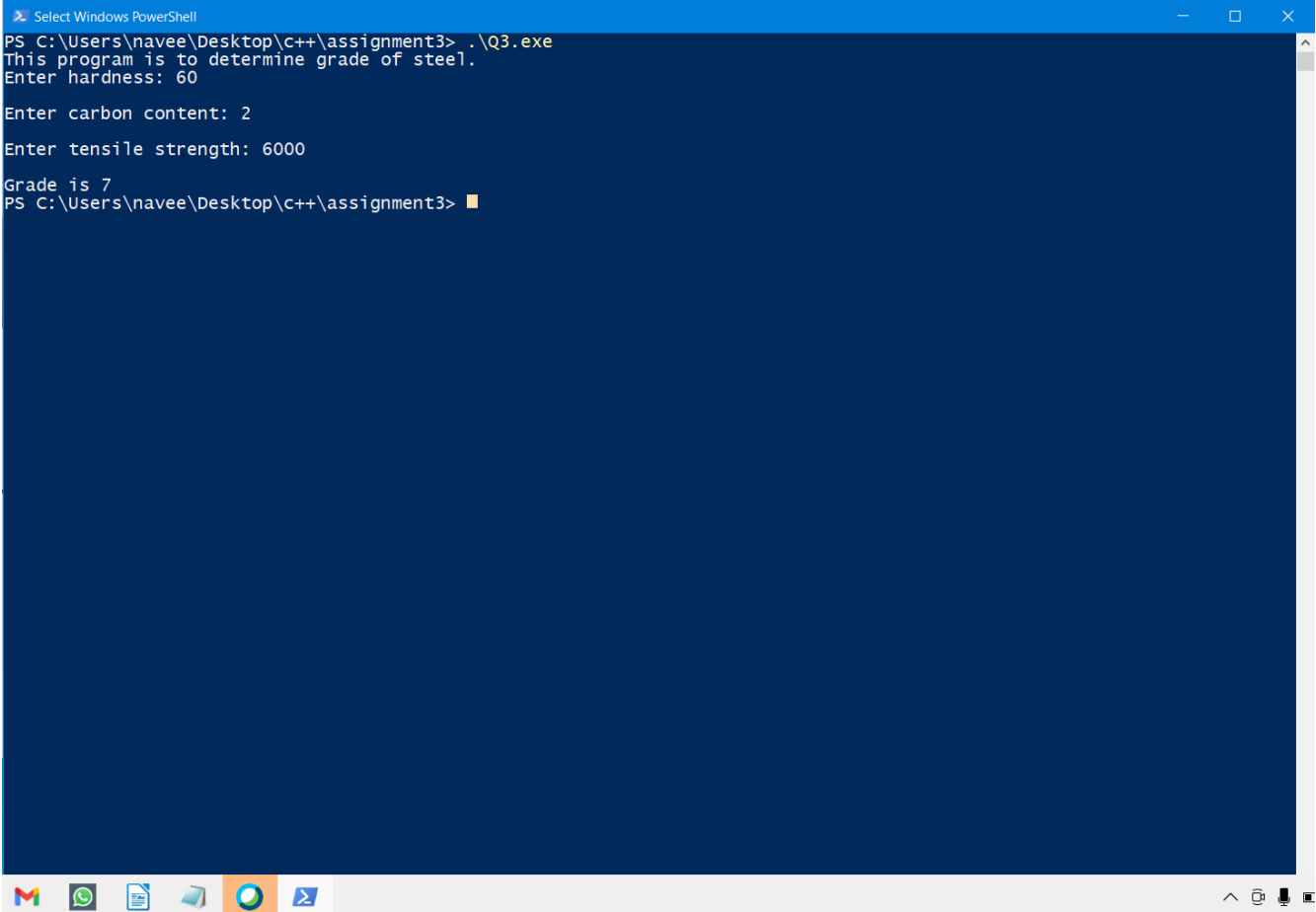
```
// if statements to print grade of steel corresponds to conditions satisfied
```

```
if((hardness>50)&&(c_content<0.7)&&(ten_str>5600)){  
    cout<<"\nGrade is "<<10;  
}  
else if((hardness>50)&&(c_content<0.7)){  
    cout<<"\nGrade is "<<9;  
}  
else if((c_content<0.7)&&(ten_str>5600)){  
    cout<<"\nGrade is "<<8;  
}  
else if((hardness>50)&&ten_str>5600){  
    cout<<"\nGrade is "<<7;  
}  
else if((hardness>50)||((c_content<0.7)||((ten_str>5600))){  
    cout<<"\nGrade is "<<6;  
}  
else{  
    cout<<"\nGrade is "<<5;  
}
```

```
return 0;
```

```
}
```

Output:



```
PS C:\Users\ navee\Desktop\c++\assignment3> .\Q3.exe
This program is to determine grade of steel.
Enter hardness: 60

Enter carbon content: 2

Enter tensile strength: 6000

Grade is 7
PS C:\Users\ navee\Desktop\c++\assignment3> █
```

The screenshot shows a Windows PowerShell window titled "Select Windows PowerShell". The command prompt is at the directory `C:\Users\ navee\Desktop\c++\assignment3`. The user has executed `.\Q3.exe`, which runs a C++ program. The program prompts the user for three inputs: hardness (60), carbon content (2), and tensile strength (6000). After processing these inputs, the program outputs "Grade is 7". The PowerShell prompt then returns to `PS C:\Users\ navee\Desktop\c++\assignment3>`. The taskbar at the bottom shows icons for Google Chrome, WhatsApp, a document, a folder, a terminal, and a code editor.

Q4. A library charges a fine for every book returned late. For the first 5 days the fine is 50 paise per day, for 6-10 days the fine is one rupee per day and above 10 days the fine is 5 rupees per day. If you return the book after 30 days your membership will be cancelled. Write a program to accept the number of days the member is late to return the book and display the fine or the appropriate message.

Code:

```
//862041_Naveen Kumar Tyagi
```

```
#include<iostream>
```

```
using namespace std;
```

```
int main(){
```

```
    int days; //variable declaration
```

```
    float fine;//variable declaration
```

```
    cout<<"Enter number of days the member is late to return the book: ";
```

```
    cin>>days; //store entered in number in days
```

```
    //if statement to print fine and info about membership if if days<5
```

```
    if(days<=5){
```

```
        fine=0.5*days;
```

```
        cout<<"\nFine is "<<fine<<" Rs.";
```

```
        cout<<"\nMembership is not cancelled.";
```

```
    }
```

```
    //else if statement to print fine and info about membership if if 5<days<10
```

```
    else if((days>=6)&&(days<=10)){
```

```
        fine=0.5*5 +1*(days-5);
```

```
        cout<<"\nFine is "<<fine<<" Rs.";
```

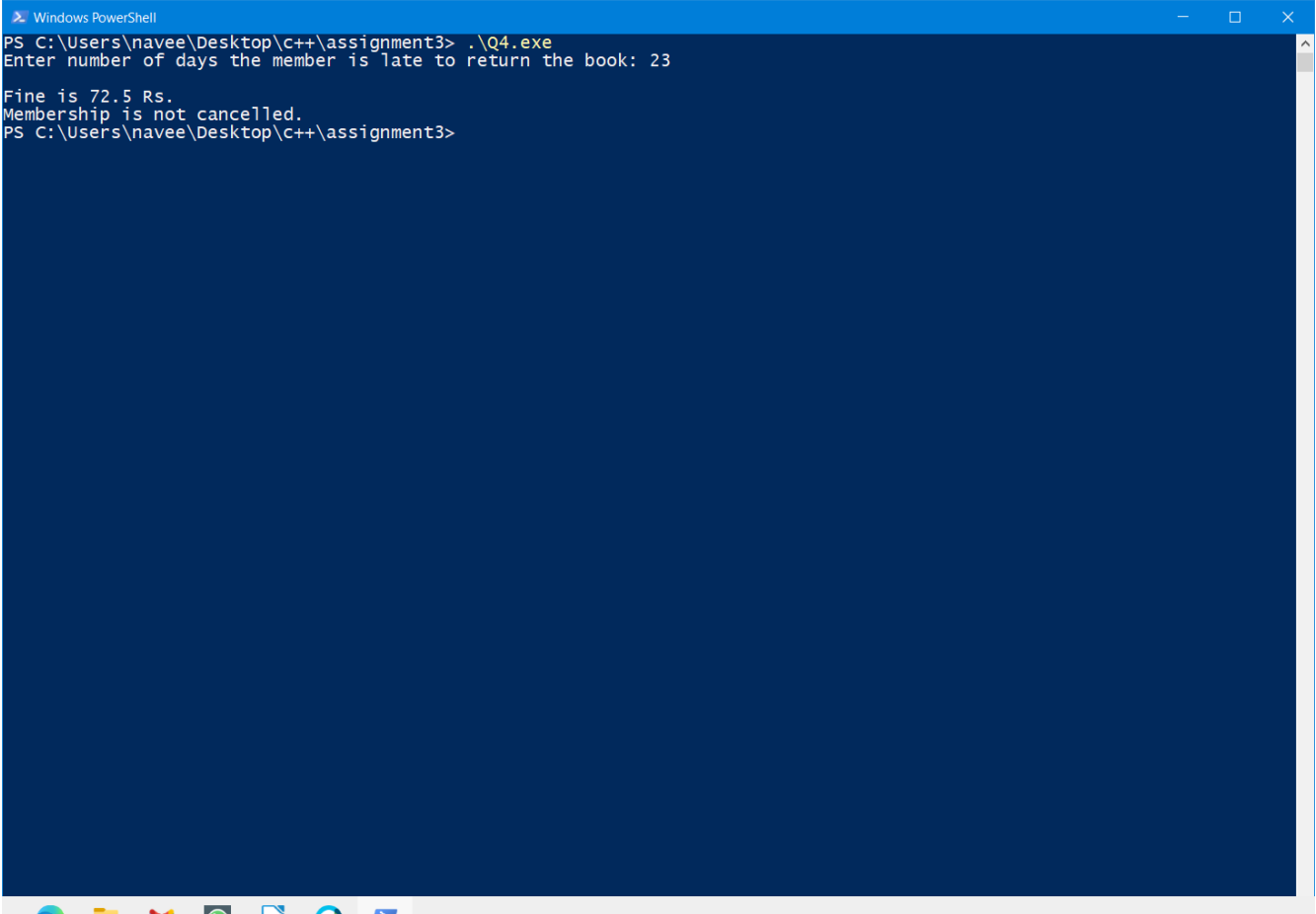
```
        cout<<"\nMembership is not cancelled.";
```

```
    }
```



```
//else if statement to print fine and info about membership if if 10<days<30
else if((days>=10)&&(days<=30)){
    fine=0.5*5 +1*5 + 5*(days-10);
    cout<<"\nFine is "<<fine<<" Rs.";
    cout<<"\nMembership is not cancelled.";
}
//else statement to print fine and info about membership if if days>30
else{
    fine=0.5*5 +1*5 + 5*(days-10);
    cout<<"\nFine is "<<fine<<" Rs.";
    cout<<"\nMembership is cancelled.";
}
return 0;
}
```

Output:

A screenshot of a Windows PowerShell window. The title bar is blue and says "Windows PowerShell". The command prompt shows the user running a program named Q4.exe. The program prompts the user to enter the number of days the member is late to return the book. The user enters 23. The program outputs "Fine is 72.5 Rs." and "Membership is not cancelled." before returning to the command prompt.

```
PS C:\Users\navee\Desktop\c++\assignment3> .\Q4.exe
Enter number of days the member is late to return the book: 23

Fine is 72.5 Rs.
Membership is not cancelled.
PS C:\Users\navee\Desktop\c++\assignment3>
```

Q5. If a three digit number is input through the keyboard, write a C++ program to reverse the number. Find if the given number is a palindrome or not.

Code:

```
//862041_Naveen Kumar Tyagi
#include<iostream>
using namespace std;
int main(){
    int num,d1,d2,d3,rev_num; //declaration of variables
    cout<<"Enter a three digit number: ";
    cin>>num;    //store entered number in num

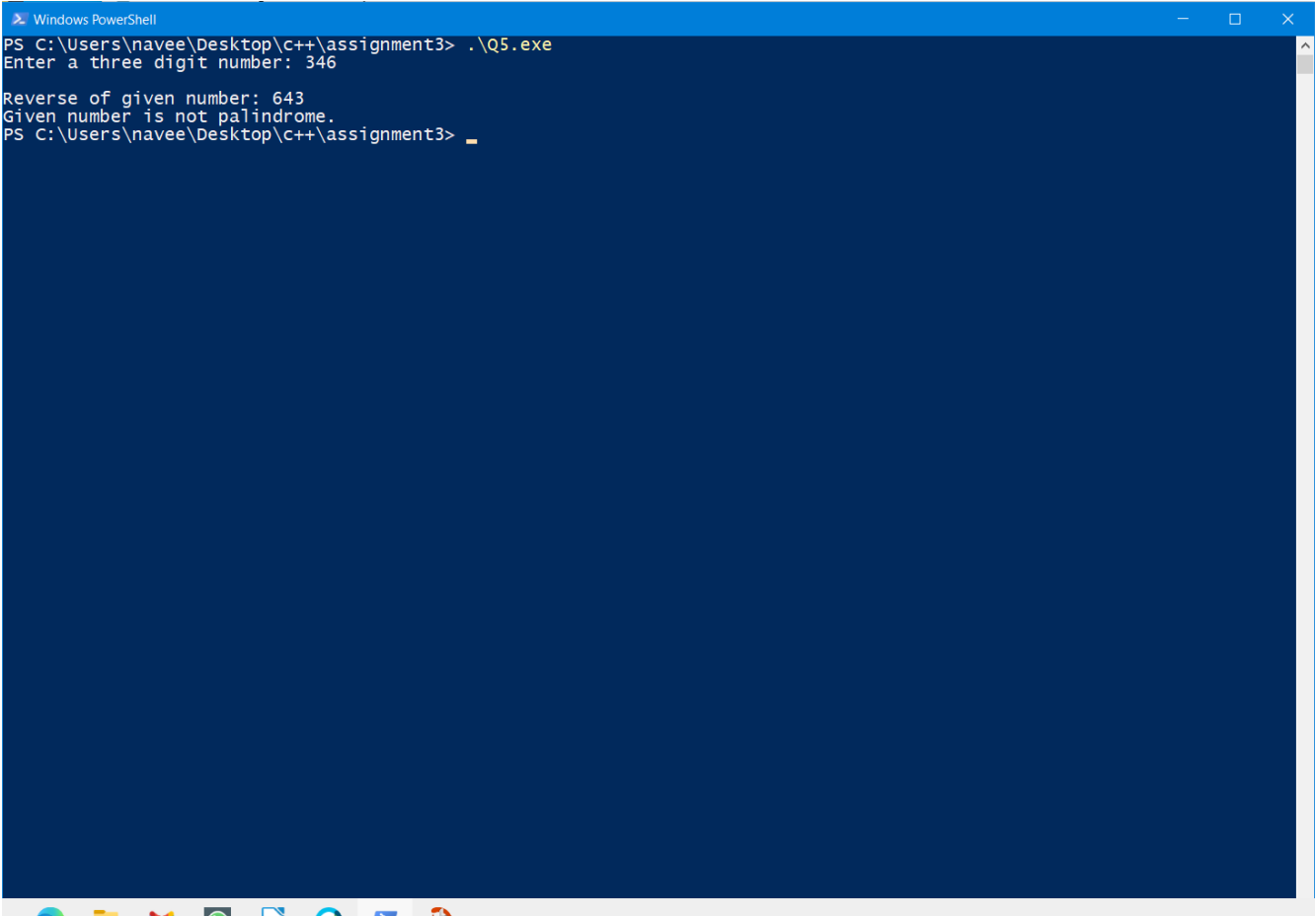
    d1=num/100; //store first digit in d1
    d2=(num/10)%10;// store second digit in d2
    d3=num%10; //store third digit in d3

    rev_num=d3*100+d2*10+d1;    //store Reverse of given number in rev_num
    cout<<"\nReverse of given number: "<<rev_num;

    //if else statements to print whether the given number is palindrome or not
    if(num==rev_num){
        cout<<"\nGiven number is palindrome.";
    }
    else{
        cout<<"\nGiven number is not palindrome.";
    }
    return 0;
```

}

Output:



```
Windows PowerShell
PS C:\Users\navsee\Desktop\c++\assignment3> .\Q5.exe
Enter a three digit number: 346

Reverse of given number: 643
Given number is not palindrome.
PS C:\Users\navsee\Desktop\c++\assignment3> _
```

Q6. Write a program that reads an integer -n (decimal number system) and convert this decimal number to Binary, Octal, and Hexadecimal form.

Code:

```
//862041_Naveen Kumar Tyagi
```

```
#include<iostream>
```

```
using namespace std;
```

```
int main(){
```

```
    int num,bin[100],i,num_bin;//declaration of variables,here bin[100] will store array of values
```

```
    cout<<"Enter a number: ";
```

```
    cin>>num;           //store entered number in num
```

```
    num_bin=num;        // store num in num_bin so that num_bin can be used to get binary form
    without affecting num value
```

```
    for(i=0;num_bin>0;i++){ //for loop to convert dec number in binary form
```

```
        bin[i]=num_bin%2; //remainder will store in array
```

```
        num_bin=num_bin/2;
```

```
    }
```

```
    cout<<"\nNumber in binary form: ";
```

```
    for(i=i-1;i>=0;i--){ // for loop to print binary form of given number
```

```
        cout<<bin[i];
```

```
    }
```

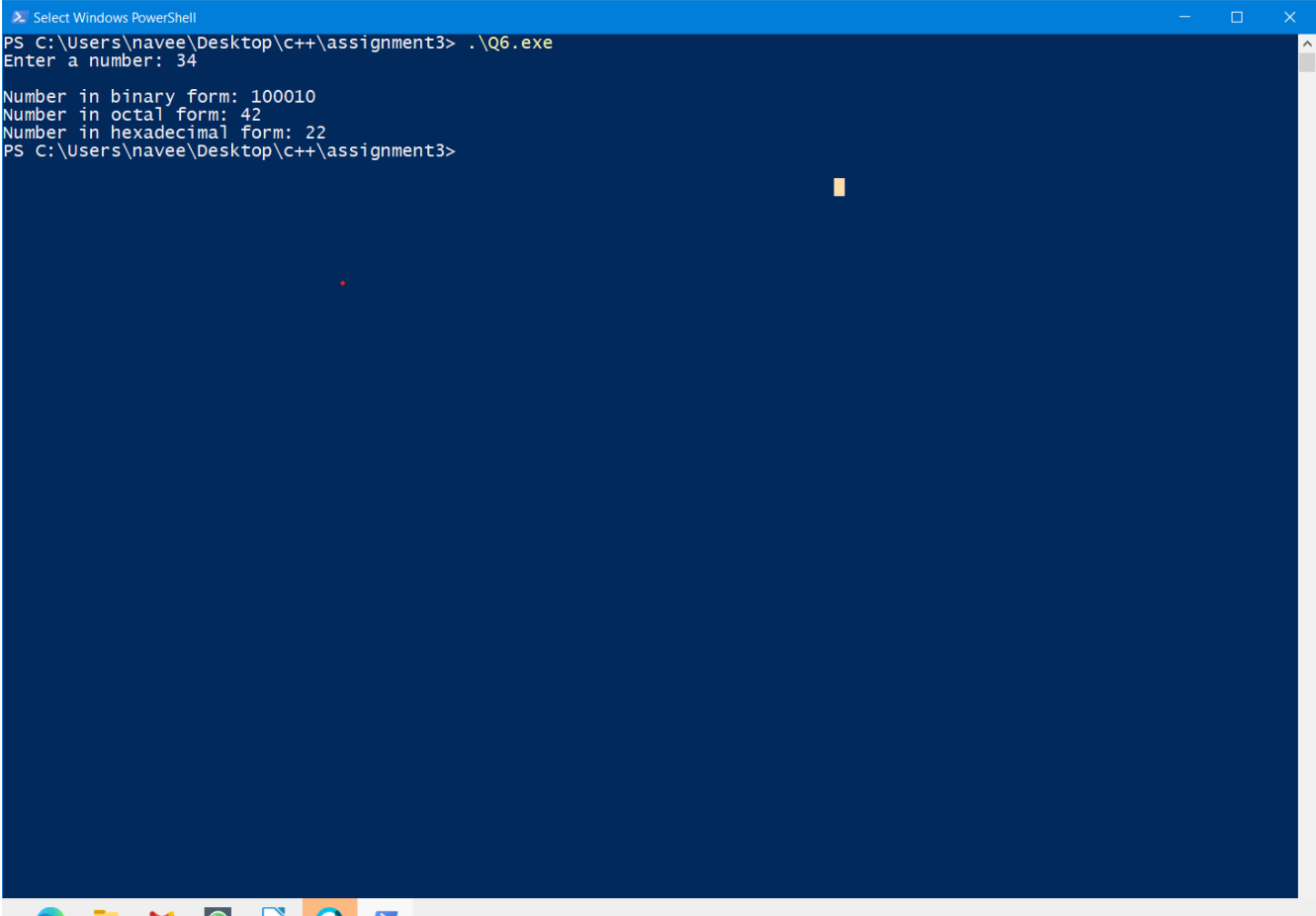
```
    cout<<"\nNumber in octal form: "<<std::oct<<num; //print given number in octal form
```

```
    cout<<"\nNumber in hexadecimal form: "<<std::hex<<num; // print given number in hexadecimal
    form
```

```
    return 0;
```

```
}
```

Output:



```
PS C:\Users\navsee\Desktop\c++\assignment3> .\Q6.exe
Enter a number: 34

Number in binary form: 100010
Number in octal form: 42
Number in hexadecimal form: 22
PS C:\Users\navsee\Desktop\c++\assignment3>
```

The image shows a Windows PowerShell window with a blue title bar and a dark blue background. The window title is "Select Windows PowerShell". The command prompt shows the user running a C++ program named Q6.exe from the directory C:\Users\navsee\Desktop\c++\assignment3. The program prompts the user to "Enter a number:" and the user enters "34". The program then outputs the number in three different bases: binary (100010), octal (42), and hexadecimal (22). The PowerShell prompt returns to the same directory. The Windows taskbar is visible at the bottom of the screen.