~\OneDrive\Desktop\assignment1.cpp

```cpp
1   #include<iostream>
2   using namespace std;
3   int main(){
4       //1 no is prime or not:  2 if not prime display factors 3 if number is prime display the next prime number:
5       int num,f=0;
6       cout<<"enter the number:"<<endl;
7       cin>>num;
8       for(int i=2;i<num-1;i++){
9           if(num%i==0){
10              cout<<"not prime"<<endl;
11              for(int j=2;j<num-1;j++){
12                  if(num%i==0){
13                      cout<<i<<endl;
14                      f=1;
15                  }
16              }
17          }
18      }
19      if(f==0){
20          int p=0;
21          cout<<"its prime"<<endl;
22          cout<<"the next prime number will be "<<endl;
23          for(int i=num+1;i<num+20;i++){
24              for(int j=2;j<i-1;j++){
25                  if(i%j==0){
26                      p=1;
27                      break;
28                  }
29                  else{
30                      p=2;
31                  }
32              }
33              if(p==2){
34                  cout<<i<<endl;
35                  break;
36              }
37          }
38      }
39      //1 reverse user array and display the array  2 display 2nd largest and 2nd smallest element of array
40      int n,a;
41      cout<<"enter the size of array:"<<endl;
42      cin>>n;
43      int arr[n];
44      int temp[n];
45      for(int i=0;i<n;i++){
46          cout<<"enter the element:"<<i+1<<endl;
47          cin>>arr[i];
48      }
49      for(int i=0;i<n;i++){
50          temp[i]=arr[n-i-1];
51      }
52      cout<<"reverse of the array is:"<<endl;
53      for(int i=0;i<n;i++){
54          cout<<temp[i]<<" ";
55      }
56      cout<<endl;
```

```cpp
57        for(int i=0;i<n;i++){
58            for(int j=i+1;j<n;j++){
59                if(arr[i]>arr[j]){
60                    a=arr[i];
61                    arr[i]=arr[j];
62                    arr[j]=a;
63                }
64            }
65        }
66        cout<<"2 largest and 2 smallest element:"<<arr[n-2]<<" "<<arr[1];
67        /*Checks whether the string is a palindrome (ignoring spaces and case sensitivity).
68          Counts and displays the frequency of each character in the string (caseinsensitive).
69          Replace all vowels in the string with a specific character (e.g., *).*/
70        int n;
71        cout<<"enter the length of string:"<<endl;
72        cin>>n;
73        char s[n];
74        int q=0;
75        cout<<"enter the string:"<<endl;
76        cin>>s;
77        for(int i=0;i<n/2;i++){
78            if(s[i]==s[n-1-i]){
79                q=1;
80            }
81            else{
82                q=2;
83                break;
84            }
85        }
86        if(q==1){
87            cout<<"its palindrome"<<endl;
88        }
89        else{
90            cout<<"its not palindrome"<<endl;
91        }
92        int count=0;
93        for(int i=0;i<n;i++){
94            for(int j=0;j<n;j++){
95                if(s[j]==s[i]){
96                    count++;
97                }
98            }
99            cout<<"frequency of chracter "<<s[i]<<" in string is "<<count<<endl;
100           count=0;
101       }
102       cout<<"replacing all vowels in string by #"<<endl;
103       cout<<"so the string after replacement of vowels by # will be:"<<endl;
104       for(int i=0;i<n;i++){
105
   if(s[i]=='a'||s[i]=='A'||s[i]=='e'||s[i]=='E'||s[i]=='i'||s[i]=='I'||s[i]=='o'||s[i]=='O'||s[i]=='u'||s[i]=='U')
   {
106               s[i]='#';
107           }
108       }
109       cout<<s<<endl;
110       //4 spiral pattern in matrix
111       int n;
112       cout<<"Enter size of square matrix: "; cin>>n;
113       int a[n][n];int t=1;
```

```cpp
114        int top=0,bottom=n-1,left=0,right=n-1;
115        while(top<=bottom && left<=right){
116        for(int i=left;i<=right;i++){
117            a[top][i]=t;
118            t++;
119        }
120        top++;
121        for(int i=top;i<=bottom;i++){
122            a[i][right]=t;
123            t++;
124        }
125        right--;
126        for(int i=right;i>=left;i--){
127            a[bottom][i]=t;
128            t++;
129        }
130        bottom--;
131        for(int i=bottom;i>=top;i--){
132            a[i][left]=t;
133            t++;
134        }
135        left++;
136        }
137        for(int i=0;i<n;i++){
138            for(int j=0;j<n;j++){
139                if(a[i][j]/10==0)
140                cout<<"0"<<a[i][j]<<" ";
141                else
142                cout<<a[i][j]<<" ";
143            }
144            cout<<endl;
145        }
146        //5 rotation of matrix by 90 degree
147        int n;
148        cout<<"Enter size of Square Matrix: "; cin>>n;
149        cout<<"Enter elements: ";
150        int a[n][n];
151        for(int i=0;i<n;i++){
152            for(int j=0;j<n;j++){
153        cin>>a[i][j];
154            }
155        }
156        cout<<"Original Matrix: "<<endl;
157        for(int i=0;i<n;i++){
158            for(int j=0;j<n;j++){
159                cout<<a[i][j]<<" ";
160            }
161            cout<<endl;
162        }
163        int b[n][n];
164        for(int i=0;i<n;i++){
165            for(int j=0;j<n;j++){
166                b[i][j]=a[j][i];
167            }
168        }
169        int flag = 0;
170        for(int i=0;i<n;i++){
171            for(int j=0;j<n/2;j++){
```

```cpp
172              flag = b[i][j];
173              b[i][j] = b[i][n-1-j];
174              b[i][n-1-j] = flag;
175          }
176      }
177      cout<<"Rotated Matrix: "<<endl;
178      for(int i=0;i<n;i++){
179          for(int j=0;j<n;j++){
180              cout<<b[i][j]<<" ";
181          }
182          cout<<endl;
183      }
184  }
```