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#include<iostream>
#include<stdlib.h>
using namespace std;

int main()
{
        int *p;
        int i;
        p=new int[5];
        cout<<"enter 5 numbers"<<endl;
        for(int i=0;i<5;i++)
        {
                cin>>p[i];
        }
        int x=0;
        for(i=0;i<5;i++)
        {
                x=x+p[i];
        }
        cout<<"added array elements into x"<<endl;
        cout<<"x="<<x<<endl;
        //palindrome logic
        int temp;
        int s;
        for(s=0,temp=x;temp;temp=temp/10)
        {
                s=(s*10)+(temp%10);
        }
        if(s==x)
        {
                cout<<"palindrome"<<endl;
                cout<<"result ->  x ="<<x<<endl;
        }
        else
        {
                //armstrong logic
                int c,r,a=0;
                for(temp=x,c=0;temp;temp=temp/10)
                {
                        c++;
                }
                for(temp=x;temp;temp=temp/10)
           {
                        r=temp%10;
                        for(i=0;i<c-1;i++)
                        {
                                r=r*c;
                        }
                        a=a+r;
                }
                if(a==x)
                {
                        cout<<"armstrong"<<endl;
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        cout<<"result -> x="<<x<<endl;
}
else
{
        cout<<"not armstrong -> a="<<a<<endl;
        //perfect number logic
        temp=x;
        int m;
        for(i=1,m=0;i<temp;i++)
        {
                if(temp%i==0)
                {
                        m=m+i;
                }
        }
        if(m==x)
        {
                cout<<"perfect num"<<endl;
                int b=1;
                for(temp=x;temp;temp=temp/10)
                {
                        b=b*(temp%10);
                }
                cout<<"result -> x="<<x<<endl;
                cout<<"product of perfect num="<<b<<endl;
        }
        else
        {
                cout<<"not perfect->"<<m<<endl;
                int res=x/3;


                //strong number logic
                int fact=1;
                int str;
                for(temp=res,str=0;temp;temp=temp/10)
                {
                        if(temp%10)
                        {
                        for(i=1,fact=1;i<=(temp%10);i++)
                        {
                                fact=fact*i;
                        }
                        }
                        else
                        {
                                fact=1;
                        }
                        str=str+fact;
                }
                if(str==res)
                {
                        cout<<"strong num"<<endl;
                        cout<<"result ="<<str<<endl;
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                                }
                                else
                                {
                                        cout<<"not strong num ->
"<<str<<endl;
                                        int rev;

for(rev=0,temp=str;temp;temp=temp/10)
                                        {
                                                rev=(rev*10)+(temp%10);
                                        }
                                        if(rev==str)
                                        {
                                                cout<<"reverse
number"<<endl;
                                                cout<<"result ->
rev="<<rev<<endl;
                                        }
                                        else
                                        {
                                                cout<<"not reverse ->
"<<rev<<endl;
                                                //prime number logic
                                                int c=0;
                                    int prime=rev;
                                                for(i=1;i<=prime;i++)
                                                {
                                                        if((prime%i)==0)
                                                        {
                                                                c++;
                                                        }
                                                }
                                                if(c==2)
                                                {
                                                        cout<<"prime
number"<<endl;
                                                        cout<<"result->
prime -> "<<prime<<endl;
                                                }
                                                else
                                                {
                                                        cout<<"not prime
-> "<<prime<<endl;
                                                        //square the num
                                                        int sqr;
                                                        sqr=prime*prime;
                                                        cout<<"square the
number"<<endl;
                                                        cout<<"result->
square-> "<<sqr<<endl;
                                                }
                                        }
                                }
                        }
```

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                    }
            }

}

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