Assignment 1

1. C++ program to keep calculate the sum of the digits of a number until the number is a single digit.
2. #include <iostream>
3. using namespace std;
4. int main()
5. {
6. int n;
7. int sum;
8. cout<<"Enter the number\n";
9. cin>>n;
10. if(n)
11. sum=(n%9==0)?9:(n%9);
12. else
13. sum=0;
14. cout<<"Sum is\n";
15. cout<<sum;
16. return 0;
17. }
18. Given a set of numbers like <10, 36, 54,89,12> we want to find sum of weights based on the following conditions  
        1. 5 if a perfect square  
        2. 4 if multiple of 4 and divisible by 6  
        3. 3 if even number

           And sort the numbers based on the weight and print it as            follows

           <10,its\_weight>,<36,its weight><89,its weight>

#include<iostream>

#include<algorithm>

#include<math.h>

using namespace std;

int checksq(int num)

{

int n=sqrt(num);

if((n\*n)==num)

{

return 5;

}

return 0;

}

int checkmd(int num)

{

if(num%4==0 && num%6==0)

return 4;

return 0;

}

int checkeven(int num)

{

if(num%2==0)

return 3;

return 0;

}

int main()

{

int n;

cout<<"Enter the no.of elements:";

cin>>n;

cout<<"Enter the elements:";

int a[n],b[n];

for(int i=0;i<n;i++)

{

cin>>a[i];

}

sort(a,a+n);

int t=0,t1=0,t2=0;

for(int i=0;i<n;i++)

{

t=checksq(a[i]);

t1=checkmd(a[i]);

t2=checkeven(a[i]);

if(t1>0||t2>0||t>0)

{

b[i]=t+t1+t2;

}

else

b[i]=0;

cout<<"<"<<a[i]<<","<<b[i]<<"> ";

}

return 0;

}

3.    Save the string “WELCOMETODONBOSCOCOLLEGE” in a two dimensional array and search for substring like “COO” in the two dimensional string both from left to right and from top to bottom.

W        E          L          C         O

M         E          T          O         D

O         N          B          O         S

C         O         C         O         L

L          E          G         E

And print the start and ending index as

Start index : <0,3>

End index: <2, 3>

#include <stdio.h>

int main()

{

char \*c="WELCOMETODONBOSCOCOLLEGE";

char array[5][5];

int x;

int y;

int i=0;

for(x=0;x<5;x++)

{

for(y=0;y<5;y++)

{

array[x][y]=c[i];

i++;

}}

for(x=0;x<5;x++)

{

for(y=0;y<5;y++)

{

printf("array[%d][%d]=%c\n",x,y,array[x][y]);

}

}

for(x=0;x<5;x++)

{

for(y=0;y<5;y++)

{

if((array[x][y]=='C')&&(array[x+1][y]=='O')&&(array[x+2][y]=='O'))

{

printf("it starts at <%d,%d>",x,y);

printf("\n");

printf("it ends at <%d,%d>",x+2,y);

}}}}

4.    Given a two dimensional array of string like

                               <”luke”, “shaw”>

                               <”wayne”, “rooney”>

                               <”rooney”, “ronaldo”>

                               <”shaw”, “rooney”>

Where the first string is “child”, second string is “Father”. And given “ronaldo” we have to find his number of grandchildren Here “ronaldo” has 2 grandchildren. So our output should be 2.

#include<iostream>

#include<string.h>

using namespace std;

int num;

char name[20];

struct reln

{

char child[20];

char father[20];

}

r[10];

int count=0;

void countChild(char name[])

{

int j;

for(j=0;j<num;j++)

{

if(strcmp(name,r[j].father)==0)

{

count++;

countChild(r[j].child);

}}}

main()

{

int i;

cout<<"\nEnter the number of inputs:";

cin>>num;

for(i=0;i<num;i++)

{

cin>>r[i].child;

cin>>r[i].father;

}

cout<<"\nEnter name of the one whose no.of grandchildren is needed:";

cin>>name;

for(i=0;i<num;i++)

{

if(strcmp(r[i].father,name)==0)

countChild(r[i].child);

}

cout<<"\nNo of grandchildren of"<<name<<"is"<<count;

}