National University of Science and Technology

School of Mechanical and Manufacturing Engineering

Lab Task #05

CS-114 Fundamentals of Programming

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Introduction:

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Section: ME-15B

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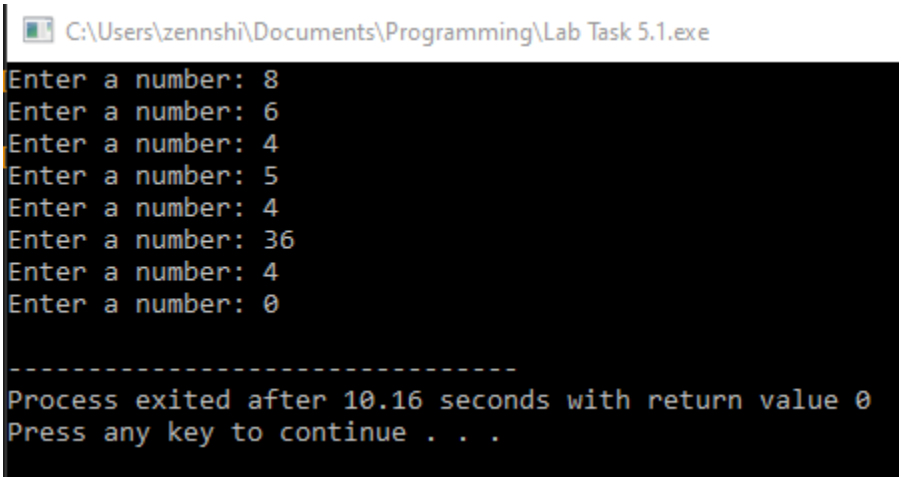
Task 1:

Convert the given while loop to a do while loop.

Solution:

```
//Task 1 Convert a While loop into do while loop

#include <iostream>

using namespace std;

int main(){

int x = 1;

do{

cout << "Enter a number: ";

cin >> x;

}

while (x>0);

return 0;

}
```

Result:



Task 2:

Use a do while loop to make a simple calculator for two numbers. Insert buttons for it to ask again and for termination.

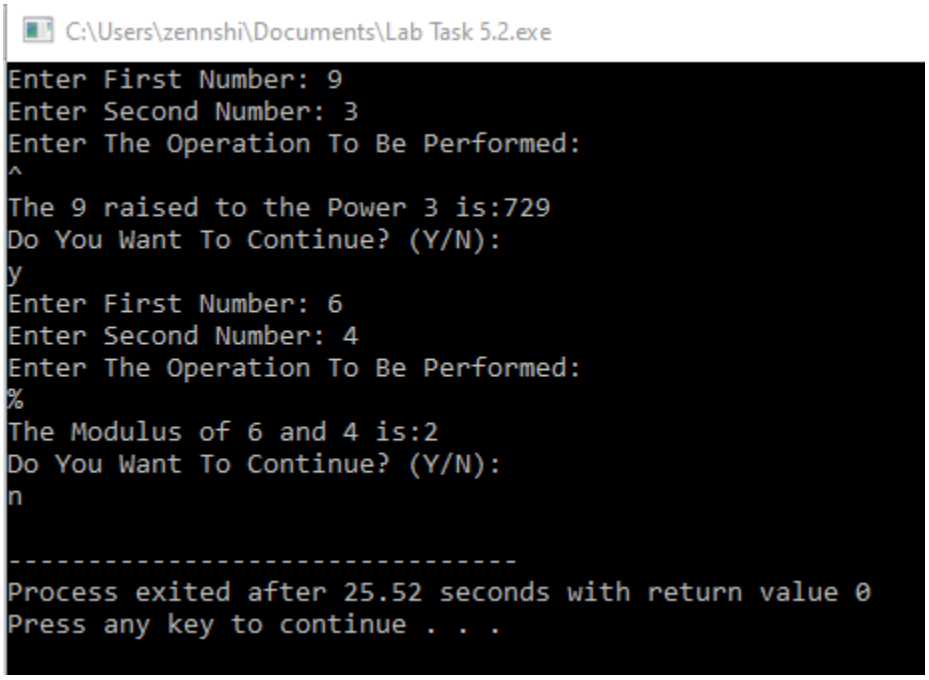
Solution:

```
//Task 2 Program To Create a Simple Calculator Using Do While Loop
#include <iostream>
#include <math.h>
using namespace std;
int main(){
int num1,num2;
float Solution;
char Operation,t;
do{
cout<<"Enter First Number: ";
cin>>num1;
cout<<"Enter Second Number: ";
cin>>num2;
cout<<"Enter The Operation To Be Performed: "<<endl;
cin>>Operation;
switch(Operation){
   case '+':
Solution=num1+num2;
cout<<"The Sum of "<<num1<<" and "<<num2<<" is:"<<Solution<<endl;
break;
  case '-':
```

```
Solution=num1-num2;
cout<<"The Subtraction of "<<num1<<" from "<<num2<<" is:"<<Solution<<endl;
break;
 case '*':
Solution=num1*num2;
cout<<"The Multiplication of "<<num1<<" by "<<num2<<" is:"<<Solution<<endl;
break;
 case '/':
if(num2==0){
cout<<"Undefined!Please Enter A Non-Zero Denominator."<<endl;
}
else{
 Solution=num1/num2;
cout<<"The Division of "<<num1<<" by "<<num2<<" is:"<<Solution<<endl;}
break;
 case '^':
Solution=pow(num1,num2);
 cout<<"The "<<num1<<" raised to the Power "<<num2<<" is:"<<Solution<<endl;
 break;
 case '%':
 if(num2==0){
cout<<"Undefined!Please Enter A Non-Zero Denominator."<<endl;
}
else{
Solution=num1%num2;
 cout<<"The Modulus of "<<num1<<" and "<<num2<<" is:"<<Solution<<endl;}
```

```
    break;
}
cout<<"Do You Want To Continue? (Y/N):"<<endl;
cin>>t;}
while(t=='Y'||t=='y');
return 0;
}
```

Result:



Task 3.1:

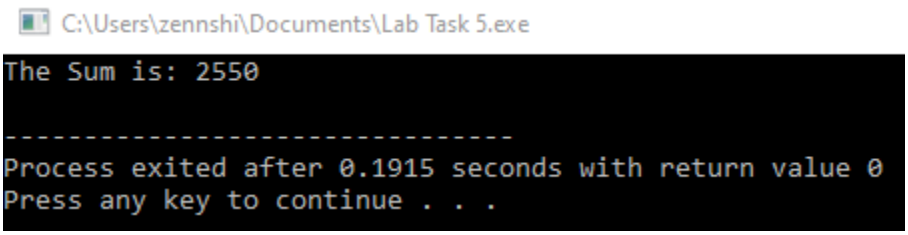
Write a program with while or do while loop that computes the sum of all even numbers between 2 and 100 (inclusive).

Solution:

```
//Task 3.1
#include <iostream>
using namespace std;
```

```
int main(){
int num=2,i=0;
while(num<=100){
if(num%2==0){
i+=num;
}
num++;
}
cout<<"The Sum is: "<<i<<endl;
return 0;
}
```

Result:



Task 3.2:

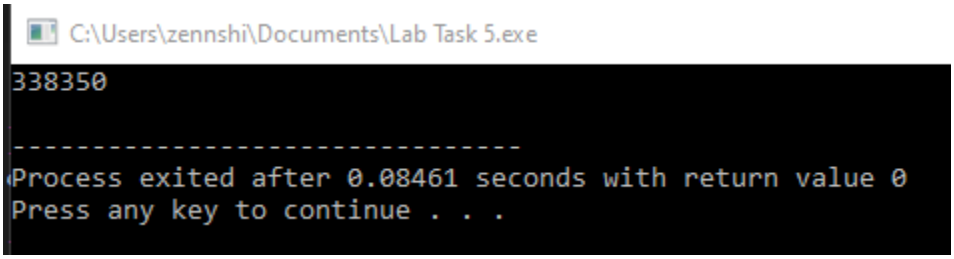
Write a program with while or do while loop that computes the sum of all squares between 1 and 100.

Solution:

```
//Task 3.2
#include <iostream>
#include<math.h>
using namespace std;
int main() {
```

```
int i=1,sum=0;
while (i<=100) {
   sum+=i*i;
   i++;
}
cout<<sum<<endl;
  return 0;
}
```

Result:



Task 4.1:

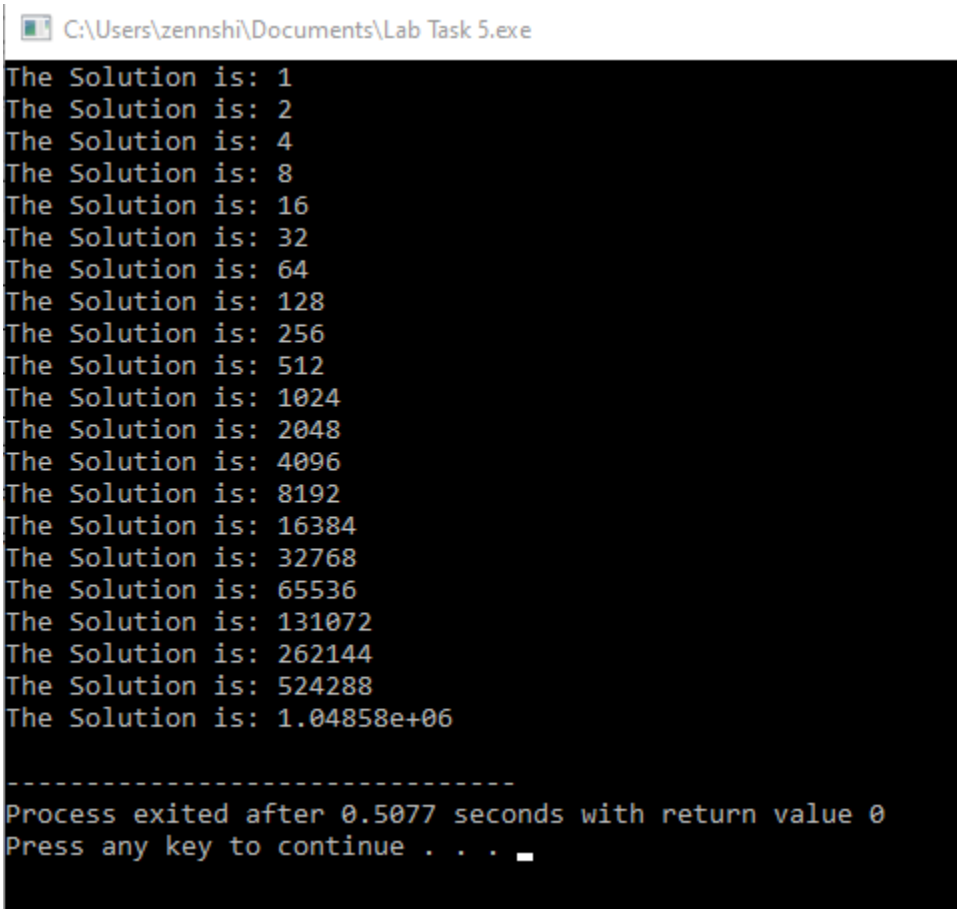
Write a program with while or do while loop that computes all powers of 2 from 20 up to 220.

Solution:

```
//Task 4.1
#include <iostream>
#include<math.h>
using namespace std;
int main() {
int i=0;
while (i<=20) {
```

```
   cout<<"The Solution is: "<<pow(2,i)<<endl;
    i+=1;
}
  return 0;
}
```

Result:

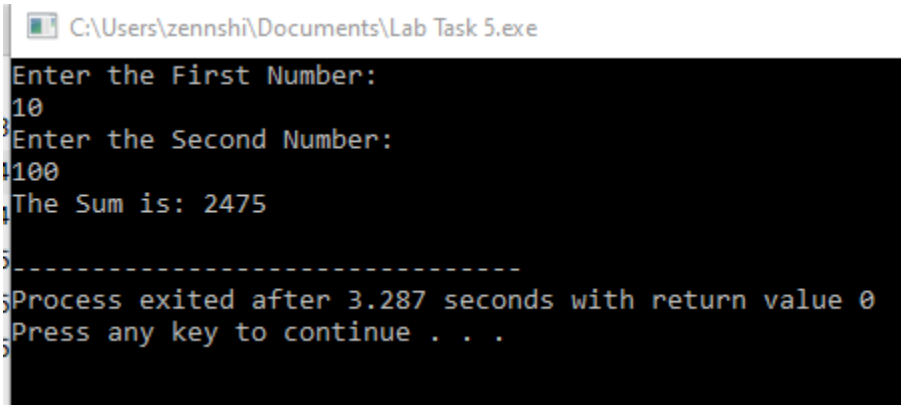


Task 4.2:

Write a program with while or do while loop that computes the sum of all odd numbers between a and b (inclusive), where a and b are inputs.

Solution:

```
//Task 4.2
```

```
#include <iostream>
#include<math.h>
using namespace std;
int main() {
int num1,num2,sum=0 ;
cout<<"Enter the First Number: "<<endl;
cin>>num1;
cout<<"Enter the Second Number: "<<endl;
cin>>num2;
while (num1<=num2) {
   if (num1%2==1 ) {
      sum=sum+num1;
   }
   num1+=1;
}
cout<<"The Sum is: "<<sum<<endl;
 return 0;
}
```

Result: