Lab 02: Answers

Implementation of factorial with “for loop”

```
int factFor(int n){
int sum =1;
     for(int i=1; i<=n;i++)
       sum*=i;
    return sum;
}
```

```
cout<< factFor(5)<<endl;
```

Implementation of factorial with “while loop”

```
int factWhile(int n){
int sum =1;  int i =1;

           while (i<=n)
         {
              sum*= i;  i++;
         }
 return sum;
}
```

```
cout<< factWhile(5)<<endl;
```

Implementation of factorial with recursion

```
int fact(int n)
{
    if (n==0)return 1;
   else return fact(n-1)*n;
}
```

```
cout<<fact(5)<<endl;
```

Implementation of Fibonacci with “for loop”

```
int FibFor(int n){
      int sum=1;
      int prevSum =1;
      int temp;
      if(n<2) return n;

      for(int i =2;i<n;++i)
       {
           temp =sum;
           sum+=prevSum;
           prevSum = temp;
      }
      return sum;
}
```

```
cout<< FibFor(5)<<endl;
```

Lab 02: Answers

Implementation of Fibonacci with “while loop”

```
int FibWhile(int n)
{
      int sum=1;
      int prevSum =1;
      int temp;
      int i=2;

      if(n<2) return n;
      while(i< n)
     {
        i++;
        temp =sum;
        sum+=prevSum;
        prevSum = temp;
      }
      return sum;
}
```

```
cout<< factWhile(5)<<endl;
```

Implementation of Fibonacci with recursion

```
int fib(int n)
{
  if(n<2)return n;
  else return(fib(n-1)+fib(n-2));
}
```

```
cout<<fact(5)<<endl;
```

Find an implementation of the Hanoi Tower recursively

```
void Hanoi(int n, int A, int B,int C){
   if(n>0)
   {
       Hanoi(n-1,A,C,B);
       cout<<"Move Disk from "<<A<<" to "<< C<<endl;
       Hanoi(n-1, B,A,C);
   }
}
```

```
Hanoi(4,1,2,3);
```