Shell Script Programs

Q1) Pattern Printing - Hollow Square

Output:

```
*****
*   *
*   *
*   *
*****
```

Shell Script:

```
for ((i=1; i<=5; i++))
do
   for ((j=1; j<=5; j++))
   do
     if [ $i -eq 1 ] || [ $i -eq 5 ] || [ $j -eq 1 ] || [ $j -eq 5 ]; then
        echo -n "*"
     else
        echo -n " "
     fi
   done
   echo
done
```

Q2) Fibonacci Series and Sum

Output:
0 1 1 2 3 5 8 13 21 34
Sum of the first 10 fibonacci numbers is: 88

Shell Script:

```
a=0
b=1
sum=0
count=0

while [ $count -lt 10 ]
do
   echo -n "$a "
   sum=`expr $sum + $a`
```

```
    fn=`expr $a + $b`
    a=$b
    b=$fn
    count=`expr $count + 1`
done

echo
echo "Sum of the first 10 fibonacci numbers is: $sum"
```

Q3) Sum of Prime Numbers from 1 to 100

Output:

Sum of prime numbers between 1 to 100 is: 1060

Shell Script:

```
sum=0

is_prime() {
    n=$1
    if [ "$n" -lt 2 ]; then
        return 1
    fi
    i=2
    while [ "$i" -le `expr $n / 2` ]; do
        if [ `expr $n % $i` -eq 0 ]; then
            return 1
        fi
        i=`expr $i + 1`
    done
    return 0
}

for num in `seq 1 100`; do
    if is_prime $num; then
        sum=`expr $sum + $num`
    fi
done

echo "Sum of prime numbers between 1 to 100 is: $sum"
```