Advanced tracing:

```
int num=25;
while(num>0)
{
   System.out.println(num%2);
   num = num / 2;
}
```

```
int num = 37;                                    // #1
String ans = "";
while(num > 0)
{
  ans = ans + num % 2;
  num = num / 2;
}
System.out.printl(ans);
```

```
int num = 37;                                    //#2
String ans = "";
while(num > 0)
{
  ans = num % 2  + ans;
  num = num / 2;
}
System.out.println(ans);
```

Looking at the previous two loops which loop (#1 or #2) is more useful loop? Why?

```
int num = 27;
String ans = "";
while(num > 0)
{
  ans = num % 4 + ans;
  num = num / 4;
}
System.out.println(ans);
```

When does this loop stop?

What is b doing each time through the loop?

What is this piece of code doing?

```
int b=0, num = 0;
double sum = 0;
while(num >= 0)
{
   Scanner kb = new Scanner(System.in);
   System.out.print("Enter a number: ");
   num = kb.nextInt();
   sum = sum + num;
   b++;
}
System.out.println("Answer is " + (sum/b));
```

For the following while loops, what is the output?

```
int x=2;
while(x<7)
{
   System.out.println(x);
   x+=2;
}
System.out.println("x is " + x);
```

```
int y=4;
while(y<7)
{
   System.out.print(y);
   y++;
}
System.out.println("y is " + y);
```

```
int y=4;
while(y<=7)
{
   System.out.print(y);
   y++;
}
System.out.println("y is " + y);
```

```
int a=1, total=0;
while(a<=5)
{
   total=total+a*2;
   System.out.println(total);
   a++;
}
System.out.print(total);
```

5. Trace the code and show the output.

b	sum	output
1	0	

```
int b=1, sum=0;
while(b <= 21)
{
   if(b%7==0)
      sum=sum+b;
   System.out.print(sum);
   b = b + 2;
}
System.out.println("Sum is " + sum);
```