3.58

```
long decode2(long x,long y,long z){
    y=y-z;
    return (x*y)^((y<<63)>>63);
}
```

3.59

$$ux = x + x_{63} * 2^{64}$$

$$uy = y + y_{63} * 2^{64}$$

$$ux * uy = x * y + (x_{63}y + y_{63}x)2^{64} + x_{63}y_{63}2^{128}$$

$$xy = ux * uy - (x_{63}y + y_{63}x)2^{64}$$

x63，y63取值0或者1

```
# dest %rdi x %rsi y%rdx
movq %rdx,%rax # %rax = y
cqto #rax extended to rdx:rax %rdx = -y_63
movq %rsi, %rcx # %rcx = x
sarq $63,%rcx # %rcx=-x_63
imulq %rax,%rcx # %rcx = -x-63*y
imulq %rsi,%rdx # %rdx = -y_63*x
addq %rdx,%rcx # %rcx =-x_63*y-y_63*x
mulq %rsi # ux*uy ph %rdx pl %rax
addq %rcx,%rdx # ph+=-(-x_63*y-y_63*x)
movq %rax,(%rdi)# 小端法
movq %rdx,8(%rdi)
ret
```

3.60

A

value	Reg
x	%rdi
n	%esi
result	%rax
mask	%rdx

B

result = 0

mask = 1

C

mask!=0

D

mask = mask << （n&0xff);

E

result |= (mask&x);

F

```
long loop(long x,int n){
    long result = 0 ;
    long mask;
    for(mask=1 ;mask!=0; mask=mask<<(n&0xff) ){
        result |=(mask&x) ;
    }
   return result;
}
```

3.62

```
long switch3(long *p1,longt *p2,mode_t action){
    long result = 0;
    switch(action){
      case MODE_A:
        result = *p2;
        *p2=*p1;
        break;
      case MODE_B:
        result = *p1+*p2;
        *p1=result;
        break;
      case MODE_C:
        *p1=59;
        result = *p2;
        break;
      case MODE_D:
        *p1 = *p2;
        result=27;
        break;
      case MODE_E:
        result = 27;
        break;
      default:
        result=12;
        break;
    }
}
```

3.64

A

```
&A[i][j][k]=Xa+8(S*T*i+T*j+k)
```

B

R = 7 S=5 T=13