BB 4 addr 0x7 @asm "inc %ebx" label pc 0x7 R OF 152:bool = phi(R OF 139:bool, R OF 164:bool) $R_EAX_32_151:u32 = phi(R_EAX_32:u32, R_EAX_32_163:u32)$ $R_PF_150:bool = phi(R_PF_144:bool, R_PF_168:bool)$ R SF 149:bool = phi(R SF 140:bool, R SF 169:bool)T t 148:u32 = phi(T t 118:u32, T t:u32)R AF 147:bool = phi(R AF 145:bool, R AF 165:bool)R ZF 146:bool = phi(R ZF 141:bool, R ZF 170:bool) $T_t_{116:u32} = R_EBX_{32}_{137:u32}$ R EBX 32 154:u32 = R EBX 32 137:u32 + 1:u32T temp 219:u32 = -2:u32T temp $220:u32 = T_t_{116:u32} ^ T_{emp_{219:u32}}$ T temp_221:u32 = $T_t_{116:u32} ^ R_EBX_{32}_{154:u32}$ T temp 222:u32 = T temp 220:u32 & T temp 221:u32R OF 155:bool = high:bool(T temp 222:u32)T temp 223:u32 = R EBX $32 154:u32 ^ T t 116:u32$ T temp 224:u32 = T temp $223:u32 ^ 1:u32$ T temp 225:u32 = 0x10:u32 & T temp 224:u32R AF 156:bool = 0x10:u32 == T temp 225:u32 $T_{emp}_{226:u32} = R_{EBX}_{32}_{154:u32} >> 4:u32$ $T_acc_{117:u32} = T_temp_{226:u32} ^ R_EBX_{32}_{154:u32}$ T temp 227:u32 = T acc 117:u32 >> 2:u32 $T_acc_117_158:u32 = T_temp_227:u32 ^ T_acc_117:u32$ T temp 228:u32 = T acc 117 158:u32 >> 1:u32T temp_229:u32 = $T_{emp}_228:u32 ^ T_{acc}_{117}_{158:u32}$

 $T_{temp}_{230:bool} = low:bool(T_{temp}_{229:u32})$ $R_{pf}_{159:bool} = \sim T_{temp}_{230:bool}$ $R_{sf}_{160:bool} = high:bool(R_{EBX}_{32}_{154:u32})$ $R_{sf}_{161:bool} = 0:u32 == R_{EBX}_{32}_{154:u32}$ BB_Exit /*exit node*/

```
BB 1
                   addr 0x2 @asm "shl %cl,%ebx"
                             label pc_0x2
                 T_{orig}DEST:u32 = R_{EBX} 32_{126:u32}
            T_{orig}COUNT:u32 = R_{ECX}_{32:u32} \& 0x1f:u32
             T temp 183:u32 = R ECX 32:u32 \& 0x1f:u32
     R EBX 32 137:u32 = R EBX 32 126:u32 << T temp 183:u32
            T_{\text{temp}} = 184:bool = T_{\text{orig}} = 0:u32
           T temp 185:u32 = 0x20:u32 - T \text{ origCOUNT:}u32
       T_{\text{temp }} 186:u32 = T_{\text{origDEST:}}u32 >> T_{\text{temp }} 185:u32
             T \text{ temp } 187:bool = low:bool(}T \text{ temp } 186:u32)
R CF 138:bool = if T temp 184:bool then R CF:bool else T temp 187:bool
            T_temp 188:bool = T_origCOUNT:u32 == 0:u32
            T_{\text{temp }}189:bool = T_{\text{orig}}COUNT:u32 == 1:u32
           T temp 190:bool = high:bool(R EBX 32 137:u32)
         T_temp 191:bool = T_temp 190:bool ^ R_CF_138:bool
      T_temp_192:bool = unknown "OF undefined after shift":bool
                          T_temp 193:bool =
     if T temp 189:bool then T temp 191:bool else T temp 192:bool
R OF 139:bool = if T temp 188:bool then R OF:bool else T temp 193:bool
            T temp 194:bool = T origCOUNT:u32 == 0:u32
           T temp 195:bool = high:bool(R EBX 32 137:u32)
R SF 140:bool = if T temp 194:bool then R SF:bool else T temp 195:bool
            T temp 196:bool = T origCOUNT:u32 == 0:u32
           T temp 197:bool = 0:u32 == R EBX 32 137:u32
R ZF 141:bool = if T temp 196:bool then R ZF:bool else T temp 197:bool
           T temp 198:u32 = R EBX 32 137:u32 >> 4:u32
        T_{acc} 113:u32 = T_{temp} 198:u32 ^ R EBX 32 137:u32
             T temp 199:u32 = T acc 113:u32 >> 2:u32
       T acc 113 143:u32 = T temp 199:u32 ^T acc 113:u32
            T temp 200:bool = T origCOUNT:u32 == 0:u32
           T temp 201:u32 = T acc 113 143:u32 >> 1:u32
       T temp 202:u32 = T temp 201:u32 ^ T acc 113 143:u32
             T temp 203:bool = low:bool(T temp 202:u32)
                 T temp 204:bool = \sim T temp 203:bool
R PF 144:bool = if T temp 200:bool then R PF:bool else T temp 204:bool
            T temp 205:bool = T origCOUNT:u32 == 0:u32
      T_temp_206:bool = unknown "AF undefined after shift":bool
R AF 145:bool = if T temp 205:bool then R AF:bool else T temp 206:bool
```

BB 2

label pc 0x4

cjmp R CF 138:bool, 7:u32, "nocjmp0"

addr 0x4 @asm "jb

0x00000000000000007"

BB 0 addr 0x0 @asm "add %eax,%ebx" label pc 0x0 T t1:u32 = R EBX 32:u32T t2:u32 = R EAX 32:u32R EBX 32 126:u32 = R EBX 32:u32 + T t2:u32R CF:bool = R EBX 32 126:u32 < T t1:u32T temp:u32 = ~T t2:u32T temp $172:u32 = T t1:u32 ^ T temp:u32$ T temp $173:u32 = T t1:u32 ^ R EBX 32 126:u32$ T temp 174:u32 = T temp 172:u32 & T temp 173:u32R OF:bool = high:bool(T temp 174:u32)T temp 175:u32 = R EBX $32 126:u32 ^ T t1:u32$ T temp 176:u32 = T temp $175:u32 ^ T$ t2:u32 T temp 177:u32 = 0x10:u32 & T temp 176:u32R AF:bool = 0x10:u32 == T temp 177:u32 $T_{emp_178:u32} = R_{EBX_32_126:u32} >> 4:u32$ T acc:u32 = T temp $178:u32 ^ R$ EBX 32 126:u32T temp 179:u32 = T acc:u32 >> 2:u32T acc $131:u32 = T \text{ temp } 179:u32 ^ T \text{ acc:}u32$ T temp 180:u32 = T acc 131:u32 >> 1:u32T temp 181:u32 = T temp $180:u32 ^ T$ acc 131:u32 $T_{temp_182:bool} = low:bool(T_{temp_181:u32})$ $R_PF:bool = \sim T_temp_182:bool$ R SF:bool = high:bool(R EBX 32 126:u32) $R_ZF:bool = 0:u32 == R_EBX_32_126:u32$

BB 3 label nocjmp0 addr 0x6 @asm "inc %eax" label pc 0x6 $T_t:u32 = R_EAX_32:u32$ $R_EAX_32_163:u32 = R_EAX_32:u32 + 1:u32$ T temp 207:u32 = -2:u32T temp $208:u32 = T t:u32 ^ T temp 207:u32$ $T_{temp}_{209:u32} = T_{t:u32} ^ R_{EAX}_{32}_{163:u32}$ $T_{temp}_{210:u32} = T_{temp}_{208:u32} & T_{temp}_{209:u32}$ R OF 164:bool = high:bool(T temp 210:u32) $T_{temp}_{211:u32} = R_{EAX}_{32}_{163:u32} ^ T_{t:u32}$ T temp 212:u32 = T temp $211:u32 ^ 1:u32$ T temp 213:u32 = 0x10:u32 & T temp 212:u32R AF 165:bool = 0x10:u32 == T temp 213:u32 $T_{temp_214:u32} = R_{EAX_32_163:u32} >> 4:u32$ T acc 115:u32 = T temp $214:u32 ^ R$ EAX 32 163:u32T temp 215:u32 = T acc 115:u32 >> 2:u32T acc 115 167:u32 = T temp $215:u32 ^ T$ acc 115:u32 $T_{temp_216:u32} = T_{acc_115_167:u32} >> 1:u32$ $T_{temp}_{217:u32} = T_{temp}_{216:u32} ^ T_{acc}_{115}_{167:u32}$ T temp 218:bool = low:bool(T temp 217:u32) R PF $168:bool = \sim T temp 218:bool$ R SF 169:bool = high:bool(R EAX 32 163:u32)R ZF 170:bool = 0:u32 == R EAX 32 163:u32

BB_Entry /*entry node*/