```
library ieee;
use ieee.std logic 1164.all;
use ieee.std logic arith.all;
use ieee.std_logic_unsigned.all;

entity william is
-------------------------------------------------------------------------
 port(ACTAL,SYARM,TAMPS,CAPLK,REDBUT,GRNBUT,PURBUT,BLUBUT:in bit;
        OALMLED:out std logic vector (1 downto 0);
        CLK:in std_logic;SYSARMD,TAMPERS,CAPSLOC,REDLUT,GRNLUT,
        PURLUT,BLULUT,OPTO:out bit);
----------------INPUTS-----------------------------------------------------
 attribute LOC: string;
 attribute LOC of ACTAL: signal is "P2";---IPT activate alarm
 attribute LOC of SYARM: signal is "P3";---IPT alarm armed
 attribute LOC OF TAMPS: signal is "P4";---IPT tamper alarm
 attribute LOC OF CAPLK: signal is "P5";---IPT caps lock
 attribute LOC OF REDBUT: signal is "P6";--IPT red letters LUT selected
 attribute LOC OF GRNBUT: signal is "P7";--IPT green letters LUT selected
 attribute LOC OF PURBUT: signal is "P8";--IPT purple letters LUT selected
 attribute LOC OF BLUBUT: signal is "P9";--IPT blue letters LUT selected
------------------OUTPUTS----------------------------------------------------
 attribute LOC of OALMLED: signal is "P23 P22";--OPT oscillating leds for
                                                  active alarm LEDS
 attribute LOC of SYSARMD: signal is "P21";------OPT SYSTEM ARMED  activted LED
 attribute LOC of TAMPERS: signal is "P20";------OPT TAMPER switch activted LED
 attribute LOC of CAPSLOC: signal is "P19";------OPT caps lock key activated LED
 attribute LOC of REDLUT: signal is "P18";-------OPT red LUT is selected LED
 attribute LOC of GRNLUT: signal is "P17";-------OPT green LUT is selected LED
 attribute LOC of PURLUT: signal is "P16";-------OPT purple LUT is selected LED
 attribute LOC of BLULUT: signal is "P15";-------OPT blue LUT is selected LED
 attribute LOC of OPTO: signal is "P14";---------OPT OPTO/ SIREN
 end;
-------------------------------------------------------------------------
architecture behavioral of william is
------------OSCILLATING ALARM LEDS-------------------------------------
process (ACTAL,CLK)
 begin
   if ACTAL ='0' then OALMLED <= "11";OFF OFF
   elsif ACTAL ='1'and CLK ='0' then OALMLED<="10";OFF ON -->AT 1 HZ GIVES
                                                    OSCILLATING AFFECT
   elsif ACTAL='1' and CLK ='1' then OALMLED<="01";ON OFF --> AT 1 HZ GIVES
                                                    OSCILLATING AFFECT
   else OALMLED<="11";OFF OFF
 end if;
end process;
---------------OUTPUT LEDS-----------------------------------------------
process (SYARM,TAMPS,CAPLK,REDBUT,GRNBUT,PURBUT,BLUBUT)
 begin
```

```
  SYSARMD<=not SYARM;REVERSE LOGIC TO SINK OUTPUT AND TURN ON LEDS
  TAMPERS<=not TAMPS;REVERSE LOGIC TO SINK OUTPUT AND TURN ON LEDS
  CAPSLOC<=not CAPLK;REVERSE LOGIC TO SINK OUTPUT AND TURN ON LEDS
  REDLUT<=not REDBUT;REVERSE LOGIC TO SINK OUTPUT AND TURN ON LEDS
  GRNLUT<=not GRNBUT;REVERSE LOGIC TO SINK OUTPUT AND TURN ON LEDS
  PURLUT<=not PURBUT;REVERSE LOGIC TO SINK OUTPUT AND TURN ON LEDS
  BLULUT<=not BLUBUT;REVERSE LOGIC TO SINK OUTPUT AND TURN ON LEDS
  OPTO<=not ACTAL;REVESE LOGIC TO SINK OUTPUT AND TURN ON SIREN
 end process;
--------------------------------------------------------------------------------
end behavioral;
```