```
1   --CODE FOR BUTTERFLY
2   library IEEE;                                   --IMPORTING LIBRARY
3   use IEEE.STD_LOGIC_1164.ALL;
4   library work;                                   --USING FILES FROM WORK DIRECTORY
5   use work.dif_ifft_pkg.ALL;                      --USING PACKAGE DIT_IFFT_PKG FROM
    WORK DIRECTORY
6   ------------------------------------------------------------------------------------
    ----------------------------
7   entity butterfly is                             --ENTITY DECLARATION
8      port(
9         b1,b2 : in complex;                       --INPUTS OF BUTTERFLY STRUCTURE
10        w :in complex;                            --PHASE FACTOR
11        z1,z2 :out complex);                      --OUTPUTS OF LIBRARY
12  end butterfly;
13  ------------------------------------------------------------------------------------
    ----------------------------
14  architecture Behavioral of butterfly is         --ARCHITECTURE DECLARATION
15  signal z2_temp : complex;                       --SIGNAL DECLARATION
16  begin
17  z1 <= add(b1,b2);                               --BUTTERFLY EQUATION FOR ADDITION
18  z2_temp <= sub(b1,b2);
19  z2 <= multi(z2_temp,w);                         --BUTTERFLY EQUATION FOR
    SUBSTRACTION
20  end Behavioral;
```