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1  --PACKAGE FOR DIF_IFFT_8PT
2  library IEEE;                                --IMPORTING LIBRARY
3  use IEEE.std_logic_1164.all;
4  use IEEE.MATH_REAL.ALL;                      --USING MATH_REAL LIBRARY
5  -----
6  package dif_ifft_pkg is                      --PACKAGE DECLARATION
7  type complex is                             --DEFINING A DATA STRUCTURE
8      record                                  --DEFINING RECORD
9          r : real;
10         i : real;
11     end record;
12 type ar is array (0 to 7) of complex;        --DECLARING AN ARRAY OF TYPE
13     COMPLEX OF LENGTH = 8
14 type ar2 is array (0 to 3) of complex;        --DECLARING AN ARRAY OF TYPE
15     COMPLEX OF LENGTH = 4
16
17 function add (n1,n2 : complex) return complex; --FUNCTION DECLARATION OF
18     ADDITION
19 function sub (n1,n2 : complex) return complex; --FUNCTION DECLARATION OF
20     SUBTRACTION
21 function multi (n1,n2 : complex) return complex; --FUNCTION DECLARATION OF
22     MULTIPLICATION
23
24 end dif_ifft_pkg;
25 -----
26 -----
27
28 package body dif_ifft_pkg is                --START OF PACKAGE BODY
29 -----
30
31 --FUNCTION FOR ADDITION
32 function add (n1,n2 : complex) return complex is
33     variable s : complex;                    --VARIABLE DECLARATION
34     begin
35         s.r:=n1.r + n2.r;                    --ADDITION OF REAL PARTS
36         s.i:=n1.i + n2.i;                    --ADDITION OF IMAGINARY
37         PARTS
38         return s;                            --RETURNING SUM
39     end add;
40 -----
41 -----
42
43 --FUNCTION FOR SUBTRACTION
44 function sub (n1,n2 : complex) return complex is
45     variable d : complex;                    --VARIABLE DECLARATION
46     begin
47         d.r:=n1.r - n2.r;                    --SUBTRACTING REAL PARTS
48         d.i:=n1.i - n2.i;                    --SUBTRACTING IMAGINARY PARTS
49         return d;                            --RETURNING SUBTRACTED VALUE
50     end sub;
51 -----
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46
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48 -----
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49 --FUNCTION FOR MULTIPLICATION.
50 function multi (n1,n2 : complex) return complex is
51 variable p : complex;                                --VARIABLE DECLARATION
52 begin
53 p.r:=(n1.r * n2.r) - (n1.i * n2.i);                  --MULTIPLYING REAL WITH
IMAGINARY VALUE
54 p.i:=(n1.r * n2.i) + (n1.i * n2.r);                  --MULTIPLYING IMAGINARY PARTS
55 return p;                                             --RETURNING MULTIPLIES VALUE
56 end multi;
57 -----
-----
58 end dif_ifft_pkg;                                    --END OF PACKAGE BODY
59 -----
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60
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