

C-10 1.
For X = 3

Case 1.

```
IF x >= 0 THEN
    x:= x+1;
ELSIF x >=1 THEN
    x := x + 2;
END IF;
```

In the case above, only the $x:= x+1$ statement is executed and the result is 4;

Case 2.

```
IF x >= 0 THEN
    x := x + 1;
END IF;
IF x >= 1 THEN
    x := x + 2;
END IF;
```

In this case, both the $x:=x+1$ and $x:= x+2$ statements will be executed and the result is 6.

C-10 2.

Package Specification Listing

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Checking: c:/docume~2/jk/desktop/16070/codeso~1/my_math_package.ads (source file time stamp: 2003-09-24 03:27:46)

```
1. -----
2. -- Package specified to implement two arithmetic functions
3. -- Specifier : Jayakanth Srinivasan
4. -- Date Last Modified : 09/23/2003
5. -----
6.
7.
8. package My_Math_Package is
9.   subtype Menu_Choice is Integer range 1 .. 3;
10.
11.  procedure Menu (
12.    My_Menu_Choice : out Menu_Choice );
13.
14.  function Add (
15.    X : Float;
16.    Y : Float )
17.    return Float;
18.
19.  function Multiply (
20.    X : Integer;
21.    Y : Integer )
22.    return Integer;
23. end My_Math_Package;
```

23 lines: No errors

Package Code Listing

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Compiling: c:/docume~2/jk/desktop/16070/codeso~1/my_math_package.adb (source file time stamp: 2003-09-24 03:27:46)

```
1. -----
2. -- Package implementation of My_Math package
3. -- Implementer : Jayakanth Srinivasan
4. -- Date Last Modified : 09/23/2003
5. -----
6. with Ada.Integer_Text_Io;
7. with Ada.Text_Io;
8. with Ada.Float_Text_Io;
9. |
```

```

10. package body My_Math_Package is
11.
12.
13.   function Add (
14.     X : float;
15.     Y : float)
16.   return float is
17.   begin
18.     return (X+Y);
19.
20.   end Add;
21.
22.
23.   function Multiply (
24.     X : Integer;
25.     Y : Integer )
26.   return Integer is
27.   begin
28.     return (X*Y);
29.   end Multiply;
30.
31.   procedure Menu (
32.     My_Menu_Choice : out Menu_Choice ) is
33.
34.   begin
35.     Ada.Text_Io.Put_Line("_____");
36.     Ada.Text_Io.Put_Line("JK's Program to Implement Simple Math Functions");
37.     Ada.Text_Io.Put_Line("_____");
38.     Ada.Text_Io.Put_Line("1. Add Two Numbers");
39.     Ada.Text_Io.Put_Line("2. Multiply Two Integers");
40.     Ada.Text_Io.Put_Line("3. Quit");
41.     Ada.Text_Io.Put("Please Enter Your Choice (1-3) : ");
42.     Ada.Integer_Text_Io.Get(My_Menu_Choice);
43.   end Menu;
44.
45.
46.
47. end My_Math_Package;

```

47 lines: No errors

C-10 3. Algorithm

1. Display the menu to the user
2. Get the menu choice from the user
3. If Choice is 1 then
 - a. Prompt the user for two floating point numbers
 - b. Clear the screen
 - c. Compute the sum using the math package
 - d. Display the answer in the required format.
4. If Choice is 2 then
 - a. Prompt the user for two integer numbers
 - b. Clear the screen
 - c. Compute the product using the math package
 - d. Display the answer in the required format.
5. If Choice is 3 then
 - a. Exit the program

Code Listing

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Compiling: c:/docume~2/jk/desktop/16070/codeso~1/test_math.adb (source file time stamp: 2003-09-24 03:47:18)

```
1. -----
2. -- Program to implement a menu driven program using the
3. -- the math package
4. -- Programmer : Jayakanth Srinivasan
5. -- Date Last Modified : 09/23/2003
6. -----
7. with My_Math_Package;
8. with Ada.Text_IO;
9. with Ada.Float_Text_IO;
10. with Ada.Integer_Text_IO;
11. with Screen;
12.
13. procedure Test_Math is
14.   Choice : My_Math_Package.Menu_Choice;
15.   X,
16.   Y      : Integer;
17.
18.   Number_X,
19.   Number_Y : Float;
20.
21. begin
22.   loop
23.     -- obtain the choice from the user
24.     My_Math_Package.Menu(Choice);
25.     -- exit if the user chooses 3
```

```

26. exit when Choice = 3;
27.
28. case Choice is
29.   when 1 =>
30.     -- obtain two floating point numbers
31.     Ada.Text_Io.Put ("Please Enter the Value of X : ");
32.     Ada.Float_Text_Io.Get(Number_X);
33.     Ada.Text_Io.Skip_Line;
34.
35.     Ada.Text_Io.Put("Please Enter the Value of Y : ");
36.     Ada.Float_Text_Io.Get(Number_Y);
37.     Ada.Text_Io.Skip_Line;
38.
39.     -- clear the screen
40.     Screen.Clearscreen;
41.
42.     -- display the results
43.     Ada.Text_Io.Put("Adding");
44.     Ada.Float_Text_Io.Put(Number_X);
45.     Ada.Text_Io.Put("and");
46.     Ada.Float_Text_Io.Put(Number_Y);
47.     Ada.Text_Io.Put(":");
48.
49.     Ada.Text_Io.New_Line;
50.
51.     Ada.Float_Text_Io.Put(Number_X);
52.     Ada.Text_Io.Put("+");
53.     Ada.Float_Text_Io.Put(Number_Y);
54.     Ada.Text_Io.Put("=");
55.     Ada.Float_Text_Io.Put(My_Math_Package.Add(Number_X, Number_Y));
56.     Ada.Text_Io.New_Line;
57.
58.   when 2=>
59.     -- obtain two integers
60.     Ada.Text_Io.Put ("Please Enter the Value of X : ");
61.     Ada.Integer_Text_Io.Get(X);
62.     Ada.Text_Io.Skip_Line;
63.
64.     Ada.Text_Io.Put("Please Enter the Value of Y : ");
65.     Ada.Integer_Text_Io.Get(Y);
66.     Ada.Text_Io.Skip_Line;
67.     -- clear the screen
68.     Screen.Clearscreen;
69.
70.     -- display the product
71.     Ada.Text_Io.Put("Multiplying");
72.     Ada.Integer_Text_Io.Put(X);
73.     Ada.Text_Io.Put("and");
74.     Ada.Integer_Text_Io.Put(Y);
75.     Ada.Text_Io.Put(":");
76.
77.     Ada.Text_Io.New_Line;
78.
79.     Ada.Integer_Text_Io.Put(X);
80.     Ada.Text_Io.Put("*");
81.     Ada.Integer_Text_Io.Put(Y);
82.     Ada.Text_Io.Put("=");
83.     Ada.Integer_Text_Io.Put(My_Math_Package.Multiply(X, Y));

```

```
84.  
85.     Ada.Text_Io.New_Line;  
86.  
87.     when 3 =>  
88.         -- dont have to do anything, exits at the beginning of the loop  
89.         null;  
90.     end case;  
91. end loop;  
92.  
93. end Test_Math;  
94.  
95.
```

95 lines: No errors