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**6. What values are passed to functions in line 13 and 15 in program 4.1 and 4.2? State the form of values passed.**

a. Program 4.1

In line 13, the value input by the user is calculated to the power of 2.0. The result is assigned to variable aSqr. In line 15, the total sum of aSqr and bSqr is squared root. The result is assigned to c.

b. Program 4.2

In line 13, when the user put the input in letter form, the variable input is true. Otherwise, it will be considered false and move to the next if statement. When it is true, the output will be “That’s an alphabetic character.” In line 15, the variable input needs to be in single positive integer between 0 and 9. Otherwise, it will be considered false. When it is true, the output will be “That’s a numeric digit”.

9. Program 4.3 is a program that reads 3 integers from the keyboard, calculates the average and display the average. Instead of putting all statements in function main (), the program is broken up into three small and simple functions; and function main ().

1. **List the names of user-defined functions found in 4.3?**

getAnInteger ()

calculateAverage (),

displayAverage ()

1. **For each user-defined function, rewrite the function header. Then explain all information found in it.**
2. int getAnInteger (void)

Return type: int

Function name: getAnInteger

Parameter list: (void)

1. float calculateAverage (int x, int y, int z)

Return type: float

Function name: calculateAverage

Parameter list: (int x, int y, int z)

1. void displayAverage (float avg)

Return type: void

Function name: displayAverage

Parameter list: (float avg)

1. **For each user-defined function, identify all statements that call the function.**

num1 = getAnInteger () ;

num2 = getAnInteger () ;

num3 = getAnInteger () ;

average = calculateAverage(inum1, num2, num3);

displayAverage(average);

1. **Is the following a function header or a function call?**
2. Int getAnInteger (void) = function header
3. getAnInteger () = function call
4. displayAverage (12) = function call
5. void displayAverage (float avg) = function header
6. **Identify the body of function main?**

Statements from line 27 to 38

1. **Identify the body of each user-defined function.**
2. int getAnInteger (void)

Statements from line 8 till 13

1. float calculateAverage (int x, int y, int z)

Statements from line 16 till 18

1. void displayAverage (float avg)

Statements from line 21 till 24

13. In program 4.6, **If the value entered for finalscore is 76, which statements are executed in function getGrade () ? What value is returned to function caller, and what did the caller do with it?**

Statement in line 35 – 36 is executed.

else if (score >= 70)

grade = 'B';

The function caller returns ‘B’ value and assigns the value to the letterGrade variable.

1. **If the value entered for finalscore is 76, which statements are executed in function calculatePoint () ?**

else if (score >=70)

return 3.0;

1. **In line 20, what value is returned by function excellent (scorePoint), and what did the caller do with it?**

The value returned by the function will either be “true” or “false”. The caller will use the function as a condition for the if statement. If the return is true, it will print “Congratulation…! You are excellent,” if the return is false, it will print “Try harder next semester ...!”

1. **Rewrite function getGrade () such that it uses many return statements.**

char getGrade(int score)

{

if (score >= 80)

return = 'A' ;

else if (score >= 70)

return = 'B' ;

else if (score >= 60)

return = 'C' ;

else if (score >= 50)

return = 'D' ;

else

return = 'E' ;

}

1. **Rewrite function calculatePoint () such that it uses only one return statement.**

float calculatePoint (int score)

{

float point ;

if (score >= 80)

point = 4.0;

else if (score >=70)

point = 3.0;

else if (score >= 60)

point = 2.0;

else if (score >= 50)

point = 1.0;

else

point = 0.0;

return point ;

}