Chapter 4 – Page 171 - #6

# Problem Statement

Serendipity Booksellers’ book club awards points to customers based on the number of books purchased each month as follows:

* If a customer purchases 0 books, 0 points are earned.
* If a customer purchases 1 book, 5 points are earned.
* If a customer purchases 2 books, 15 points are earned.
* If a customer purchases 3 books, 30 points are earned.
* If a customer purchases 4 or more books, 60 points are earned.

Design a program that includes a CASE structure to:

# Algorithm

1. Ask the user to enter the number of books purchased this month
2. Determine the number of points awarded
3. Display the number of points awarded

(No need for input validation or negative numbers)

# IPO Diagrams

Main module

|  |  |  |
| --- | --- | --- |
| Input | Processing | Output |
| books | SET points = Call pointCalculator(books) | Display points |

PointCalculator module

|  |  |  |
| --- | --- | --- |
| Input | Processing | Output |
| books | Select Case (books):   * 0: 0 points * 1: 5 points * 2: 15 points * 3: 30 points * 4+: 60 points | Return points |

# Hierarchy Chart

# Flowchart

## Flowchart 1.2

## Version 1.1

## Version 1.0

# Pseudocode

## Version 1.2

// Program: Chapter 4 - Page 171 - #6 MDoctor

// Author: Mark Doctor

// Course: iTech

void main ()

{

DISPLAY "Please enter the number of books purchased this month: ";

INPUT books;

SET points = pointCalculator (books);

Display "Congratulations! You've earned ", points, " points.";

}

Integer pointCalculator (books)

{

if (books > 4)

SET books = 4;

switch (books)

{

case 1:

SET points = 5;

break;

case 2:

SET points = 15;

break;

case 3:

SET points = 30;

break;

case 4:

SET points = 60;

break;

default:

SET points = 0;

}

return points;

}

## Version 1.1

// Program: Chapter 4 - Page 171 - #6 MDoctor

// Author: Mark Doctor

// Course: iTech

void main ()

{

DISPLAY "Please enter the number of books purchased this month: ";

INPUT books;

pointCalculator (books);

Display "Congratulations! You've earned ", points, " points.";

}

Integer pointCalculator (books)

{

if (books > 4)

SET books = 4;

switch (books)

{

case default:

SET points = 0;

break;

case 1:

SET points = 5;

break;

case 2:

SET points = 15;

break;

case 3:

SET points = 30;

break;

case 4:

SET points = 60;

break;

}

return points;

}

## Version 1.0

// Program: Chapter 4 - Page 171 - #6 MDoctor

// Author: Mark Doctor

// Course: iTech

void main ()

{

DISPLAY "Please enter the number of books purchased this month: ";

INPUT books;

pointCalculator (books);

Display "Congratulations! You've earned ", points, " points.";

}

Integer pointCalculator (books)

{

switch (books)

{

case 0:

SET points = 0;

break;

case 1:

SET points = 5;

break;

case 2:

SET points = 15;

break;

case 3:

SET points = 30;

break;

case 4 or more:

SET points = 60;

break;

}

return points;

}

# Java Source Code

1 //Mark Doctor, 10/2/16, iTechPM Section 4: Assignment 4a  
 2 //Purpose: Learn case structures  
 3 //Filename: bookBuyerRewards.java  
 4 //Documentation: Chapter 4 - p171 - #6 MDoctor.docx  
 5   
 6 import java.util.\*;  
 7   
 8 public class bookBuyerRewards  
 9 {  
10 public static Scanner kb = new Scanner(System.in);   
11 public static void main(String[] args)  
12 {  
13 //variable declarations  
14 int books, points;  
15   
16 //get books from user)  
17 System.out.println("Please enter the number of books purchased this month: ");  
18 books = kb.nextInt();  
19   
20 //get points with pointCalculator method  
21 points = pointCalculator(books);  
22   
23 //Display points earned  
24 System.out.println("Congratulations! You've earned " + points + " points.");   
25 }//end of main  
26   
27 //Receives books purchased and returns points earned  
28 public static int pointCalculator(int books)  
29 {  
30 int points;  
31 //force books into points case  
32 if (books > 4)  
33 {   
34 books = 4;  
35 }  
36   
37 //Set points according to books purchased. To prevent incorrectly adding points, default is 0.  
38 //Since 4 or more books all return 60 points, the previous If statement forces 4+ books to 4  
39 //to fit case 4.   
40 switch (books)  
41 {  
42 case 1:  
43 points = 5;  
44 break;  
45 case 2:  
46 points = 15;  
47 break;  
48 case 3:  
49 points = 30;  
50 break;  
51 case 4:  
52 points = 60;  
53 break;  
54 default:   
55 points = 0;  
56 break;   
57 }  
58 return points;  
59 }  
60   
61 }//end of class  
62   
63 /\*  
64   
65 ----jGRASP exec: java bookBuyerRewards  
66 Please enter the number of books purchased this month:   
67 8  
68 Congratulations! You've earned 60 points.  
69   
70 ----jGRASP: operation complete.  
71 \*/