Calculating Cost of a Fence Project

Algorithm

Ask the user about his/her yard dimensions (get yard width and yard length)

Ask the user what material he/she would like for the fence

Ask the user how many gates would he/she like to be installed?

Validate the gates number: it should be 1, 2 or 3.

Assign the fencing costs per foot according to chosen material

Calculate the total fence cost

Display the total cost of a fence

Pseudocode

Declare constants

Declare variables

Create a Scanner object

Prompt the user about what this program will do.

Prompt the user to enter the width of yard in feet

Get width of yard

Prompt the user to enter the length of yard in feet

Get length of yard

Ask the user what material he/she would like for the fence

Display prompt for entering the choice of material: 1 for Wooden and 2 for Chain-link

Get user’s choice for fence material

While fence material does not equal 1 or 2

Prompt about the invalid input

Display prompt for entering the choice of material: 1 for Wooden and 2 for Chain-link

Get user’s choice for fence material

End while

Switch fence material choice

case 1:

assign the material cost per foot to cost of Wooden fence

break;

case 2:

assign the material cost per foot to cost of Chain-Link fence

End switch

Ask the user how many gates would he/she like to install? (1/2/3)

Get the number of gates

While gate number is less than 1 or greater than 3

If gate number is less than 1

Prompt the user that at least one gate is required

Ask the user how many gates would he/she like to install? (1/2/3)

Get the number of gates

Else

Prompt the user that he/she can install up to 3 gates only

Ask the user how many gates would he/she like to install? (1/2/3)

Get the number of gates

End while

Calculate the total cost of a fence

Display the total cost of a fence

IPO Diagram

|  |  |  |
| --- | --- | --- |
| **Input** | **Processing** | **Output** |
|  |  | Display prompt about what program will do of yard |
|  |  | Display prompt that is asking user to enter width of yard |
| yardWidth | Receive yardWidth |  |
|  |  | Display prompt that is asking user to enter length |
| yardLength | Receive yardLength |  |
|  |  | Display prompt that is asking the user to choose the fence material |
| fenceMaterialIndex | Receive fenceMaterialIndex |  |
|  |  | Display prompt that is asking the user to choose the number of gates |
| gatesNumber | Receive gatesNumber |  |
|  | Calculate the fencePrice |  |
|  |  | Display the fencePrice |

Test cases:

Case 1:

Input:

yardWidth: 19

yardLength: 32

fenceMaterialIndex: 70, 1

gatesNumber: 3

Output:

\*\*\* Calculating Cost of a Fence Project \*\*\*

Enter the width of your yard in feet: 19

Enter the length of your yard in feet: 32

What material would you like for the fence?

Enter 1 for the Wooden fencing or 2 for the Chain-link fencing: 70

Invalid choice!

Enter 1 for the Wooden fencing or 2 for the Chain-link fencing: 1

How many gates would you like to install? (1/2/3): 3

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The total cost of the fence is: $3230.00

Case 2:

Input:

yardWidth: -15.5, 15.5

yardLength: -100, 20.5

fenceMaterialIndex: 0, 2

gatesNumber: 0, 4, 1

Output:

\*\*\* Calculating Cost of a Fence Project \*\*\*

Enter the width of your yard in feet: -15.5

You cannot have a negative number for yard width.

Enter the width of your yard in feet: 15.5

Enter the length of your yard in feet: -100

You cannot have a negative number for yard length.

Enter the length of your yard in feet: 20.5

What material would you like for the fence?

Enter 1 for the Wooden fencing or 2 for the Chain-link fencing: 0

Invalid choice!

Enter 1 for the Wooden fencing or 2 for the Chain-link fencing: 2

How many gates would you like to install? (1/2/3): 0

At least one gate is required.

How many gates would you like to install? (1/2/3): 4

You can install up to 3 gates only.

How many gates would you like to install? (1/2/3): 1

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The total cost of the fence is: $1353.80