

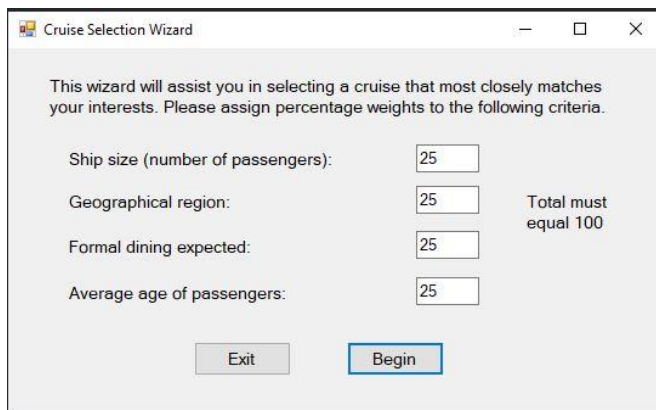
Cruise Selection Wizard

Selecting a cruise vacation can be tricky. We all have different preferences when it comes to details like the location of the cruise, the size of the ship, the average age of the passengers, and so on.

Your job is to make this selection process easier. Create a wizard application that named Cruise that contains properties that represent the characteristics of a single cruise. Use the following: (1) size of ship, (2) geographical region, (3) formal versus informal attire, and (4) average passenger age. Next, create a class that contains a strongly typed List Of Cruise object. Use the constructor of this class to fill the list with cruise information.

User Interface

Ask the user for the relative importance of each cruise criterion

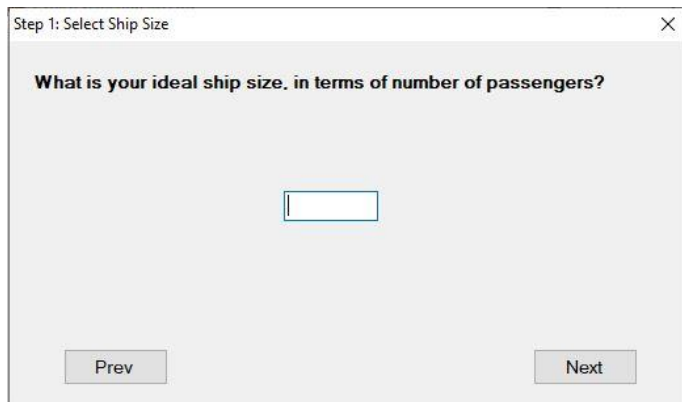


The screenshot shows a window titled "Cruise Selection Wizard". Inside, there is a message: "This wizard will assist you in selecting a cruise that most closely matches your interests. Please assign percentage weights to the following criteria." Below this, there are four rows of input fields, each with a label and a text box containing the number "25":

- Ship size (number of passengers):
- Geographical region:
- Formal dining expected:
- Average age of passengers:

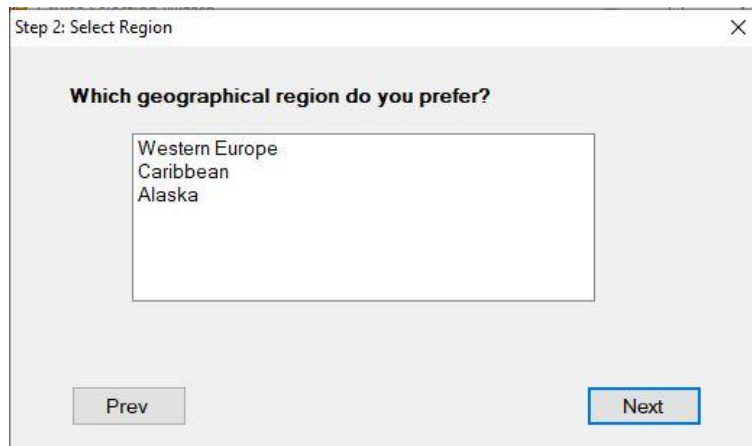
To the right of these input fields, the text "Total must equal 100" is displayed. At the bottom of the window, there are two buttons: "Exit" and "Begin".

Next, ask the user for his or her individual preferences for each of the criteria. For example, the user is asks for the ideal ship size;



The screenshot shows a dialog box titled "Step 1: Select Ship Size". Inside, there is a question: "What is your ideal ship size, in terms of number of passengers?". Below the question, there is a single-line text input field. At the bottom of the dialog box, there are two buttons: "Prev" and "Next".

Next the user is asked for an ideal geographical region;



Step 2: Select Region

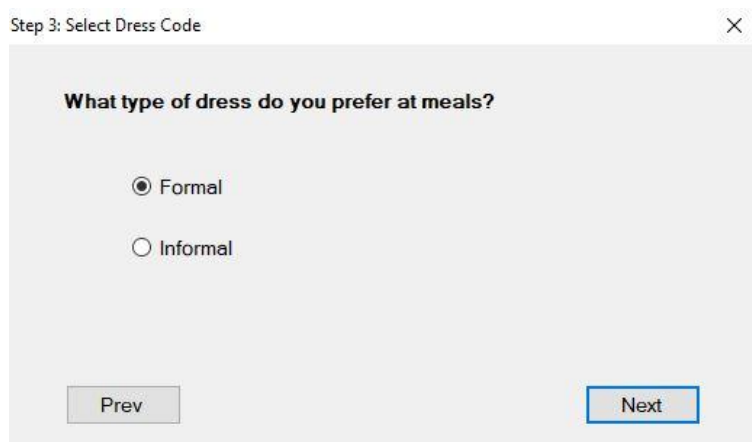
Which geographical region do you prefer?

Western Europe
Caribbean
Alaska

Prev Next

This is a dialog box titled "Step 2: Select Region". It contains a question "Which geographical region do you prefer?" and a list box with three options: "Western Europe", "Caribbean", and "Alaska". At the bottom, there are two buttons: "Prev" and "Next". The "Next" button is highlighted with a blue border.

Then ask about formal vs informal preference for the meals.



Step 3: Select Dress Code

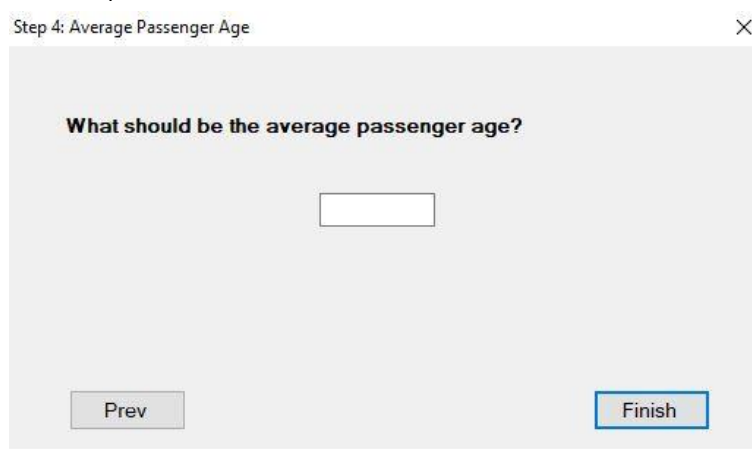
What type of dress do you prefer at meals?

☒ Formal
☐ Informal

Prev Next

This is a dialog box titled "Step 3: Select Dress Code". It contains a question "What type of dress do you prefer at meals?" and two radio button options: "Formal" (which is selected) and "Informal". At the bottom, there are two buttons: "Prev" and "Next". The "Next" button is highlighted with a blue border.

Then the user is asked about the average age of the passengers with whom they would prefer to sail.



Step 4: Average Passenger Age

What should be the average passenger age?

Prev Finish

This is a dialog box titled "Step 4: Average Passenger Age". It contains a question "What should be the average passenger age?" and a text input field. At the bottom, there are two buttons: "Prev" and "Finish". The "Finish" button is highlighted with a blue border.

And then the user is shown a list of cruises, with a percentage next to each that shows the percentage similarity of the cruise to the user's preferred criteria. The user can select different radio buttons to filter the display so it shows cruises that meet various thresholds.

Summary

Based on your preferences, the following are recommended cruises. The percentage match with your criteria is shown on the left. Select the minimum matching percentage to display:

☐ 100 ☐ 75 ☒ 50 ☐ 25 ☐ 0

Cruise Name	Region	Passengers	Formal	Avg Age
75% - Alaska - Glacier Bay , 4 days	Alaska	1200	False	25

Prev Close

Selected other minimum matching percentages to display

Summary

Based on your preferences, the following are recommended cruises. The percentage match with your criteria is shown on the left. Select the minimum matching percentage to display:

☐ 100 ☐ 75 ☐ 50 ☒ 25 ☐ 0

Cruise Name	Region	Passengers	Formal	Avg Age
50% - Fjords of Norway, 5 days	Western Europe	1000	True	45
50% - Fjords of Norway, 4 days	Western Europe	2000	False	35
25% - Norwegian Family Cruise, 3 days	Western Europe	3000	False	25
25% - Scotland, 4 days	Western Europe	1500	True	55
50% - Ireland, 3 days	Western Europe	2000	False	35
50% - Bahamas, 5	Caribbean	1500	True	45

Prev Close

Use weighted criteria to help find the cruises that best match the user's preferences. Here is an example of the types of variables we used in our solution program:

NumPassengersWt Single - Number of passengers
RegionWt Single - Geographical region
FormalWt Single - Formal attire expected?
AverageAgeWt Single - Average passenger age

The algorithm for determining the percentage match of a cruise to the user's preferences must take into account the percentages the user assigned to the individual criteria. Let's call these percentages pc1, pc2, pc3, and pc4. The user's actual preferences can be called r1, r2, r3, and r4. For each cruise, let's say that it has characteristics c1, c2, c3, and c4.

We will call **tp** the *total percentage match value* for this cruise:

```
tp = 0
if c1 = r1 then tp = tp + pc1
if c2 = r2 then tp = tp + pc2
if c3 = r3 then tp = tp + pc3
if c4 = r4 then tp = tp + pc4
```

Let's use an example, and the following table. Suppose the user has assigned the following values to the four preferences:

Preference	User's Preferred Value	Percentage Weight for Each Preference
Size of ship (r1)	1500	Pc1 = .25
Geographical region (r2)	Alaska	Pc2 = .45
Formal vs Informal (r3)	Informal	Pc3 = .20
Average Age (r4)	45	Pc4 = .10

This sample user seems mainly concerned with the geographical region (45 percent) and the size of the ship (25 percent). We'll say that the ship size matches if it is within 500 feet of the user's preferred value. The age matches if it is within five years of the user's preferred age for the passengers.

Next, let's look at a couple of sample cruises: Cruise X holds 1,700 passengers, goes to Alaska, emphasizes formal wear, and has an average passenger age of 55. Its percentage match is 70 percent:

$$.25 + .45 + 0 + 0 = .70$$

Cruise Y holds 2,500 passengers, goes to the Caribbean, emphasizes informal wear, and has an average passenger age of 45. Its percentage match is only 30 percent:

$$0 + 0 + .20 + .10 = .30$$

Based on these two sample cruise evaluations, this user would be advised to select Cruise X because it has a higher percentage match value. But another user might place more emphasis on different criteria and produce a different set of percentages.

Suggested Classes

Cruise class—contains information about a single cruise, which in turn contains the following properties:

NumPassengers Integer - number of passengers

Region String - geographical region

Formal Boolean - formal attire expected?

AverageAge Single - average passenger age

CruiseCollection class - contains a List Of Cruise object, a constructor, and a read-only property that returns the list of available cruises.