

MIDAS

MIDAS stands for Mining Internet Data Agent Specialist. It is a vacation planner. The scope is narrowed down to picking a European destination and flying from CVG to that destination and back.

I had two choices in developing this:

1. determine database schemas for each database, create the schemas, populate the data, make ways to access the databases ... and then I get to start coding.
2. Figure out how to access web pages that have this data and parse the web pages.

I chose the latter and it provided some interesting challenges:

1. Airports and car rental places use airport codes. People don't know these codes.
 1. We get these from an additional website (airportcodes.org)
2. The flight web site shows times. If a flight takes off at 9pm and arrives at 2am, MIDAS has to determine that it's another day.
3. There may be no car rentals or flights available for the location and date range.
4. Flights arrive at different times of the day. Car rentals are at the 15s (10:00, 10:15, 10:30, 10:45). I needed to adjust the times accordingly.
 1. I also decided that the program would look for a car for the the length of time you are there, taking into account being at the airport at least an hour before the departing flight takes off.
5. Since I chose Europe, there are special characters (accented vowels, etc). I replaced accented vowels with unaccented vowels. I did the same for other letters (such as the Spanish n with a tilde).

The risks are as follows:

1. The web page format may change.
2. The web site may be down.
3. The web page may have inconsistencies or different formats, making parsing difficult.

I did the best I could do to mitigate some of these risks with the limited time I had available to develop this. Two weeks were spent parsing data into something I could work with (including setting up getters, setters, array lists, etc). The last week was spent on the agent and preferences, although some agent development overlapped the "parsing data" development.

MIDAS does the following in the following order (HUGE LIST)

1. Get country and city information from the user and find an airport
 1. If there is no exact match, display all airports from that country and have the person pick one.
2. Get dates for flights and find flights. It picks the best departure and arrival based on:
 1. least stops
 2. if there are still more than 3 flights, look at layovers that are less than 1 hour. MIDAS doesn't want to person to feel rushed and possibly pick a connecting flight.
 3. if there are still more than 3 flights, look at layovers that are more than 2 hours and pick the ones with the smallest layover per connection.

1. If all flights have layover less than 2 hours, pick the ones with the least layover (again, the layover must be at least an hour)
3. Let the user pick departure and return from the best.
4. Find car rental information and let the user pick one (or 0 for no car).
 1. If none are available, tell the user and ask if that's ok. Exit program if not okay (the user will need to restart the search).
5. If MIDAS has determined cost preferences, display those and remove them from the choices. If it still hasn't determined all preferences and non preferences, display types of hotels for that city (types are based on cost) and let the user pick one or more cost ranges.
6. Do another fetch to get hotels that match that cost range. Let the user pick a hotel.
7. If MIDAS has determined restaurant type preferences (Italian, Spanish, Vegetarian, etc), display those and remove them from the choices. If there are still types of restaurants for that city that MIDAS hasn't determined your preference for, show those and allow the user to pick some (or none).
8. Do a fetch and get restaurants that match preferences and picked types. Let the user pick 1 or more.
9. Repeat 7+8 for sites and nightlife.
10. Display the itinerary and save it to a text file.

How does it learn?

Yes, it learns. The first (obvious) way of learning is it looks at things you picked. If you pick it, you obviously like it. So, if you pick the restaurant type Italian, you like Italian. MIDAS sets the preference value to 70. This is the default value out of 100 for "I like this". Once a preference reaches 70, MIDAS doesn't ask you to pick it again. If the preference falls below 70 but is above 30, you'll be asked if you're interested in that choice.

I mentioned the range was 70 to 30. The value 30 is MIDAS's determination of not liking something. It's relatively obvious that things you didn't pick either you didn't like or you weren't in the mood for. For that scenario, MIDAS sets the value to 50. It's unsure why you didn't pick it, so it shoots for the half way mark. Each time you still don't pick the same item, the value goes down by 5. If the value reaches 30, MIDAS has determined that you don't like it and won't offer the choice again.

We could also change preference values based on how many places of that type you picked. For example, let's say you pick 6 out of 8 Italian restaurants. So, you really like Italian. Based on the ratio, it increases the preference value of $4 * \text{rounded down}(\text{picked Italian restaurants} / \text{all available Italian restaurants})$. MIDAS makes sure the minimum increase is always 1 if one restaurant of that type is picked. Let's presume that in addition to the Italian restaurants, you pick two other restaurants. We can determine since of all picked restaurants (8), you picked six Italian restaurants, that you must really, really like Italian. We increase the preference by $10 * \text{round down}(\text{Italian restaurants/all restaurants})$. The minimum preference value is 0. Technically it never goes below 30 since once a preference reaches 30, the user can never pick it, so it never goes down. The maximum value is 100.

MIDAS was very successful in determining my likes and dislikes. I just generated a few vacation itineraries to generate data. I ran enough to have the system learn what I didn't like and at one point, I wasn't prompted for restaurant types as it knew my likes and dislikes. I could reset my preferences my removing the file; each preference type has a different file.

What my program could not do

1. If a user misspelled a country or city, my program couldn't compensate.
 - What I could have done is sent a query to google and looked for the “Did you mean:” part of the response and try that city/country. Of course, this would require time I didn't have. :)
2. My program presumed dates were correct and in the right order.
 - Given more time, I could have added date verification and compare. I can also do a “realistic” check, and not allow date ranges past a certain number (say 3 weeks perhaps).
3. My program didn't have description of places.
 - Fodors.com has a half a sentence description and a link, which if clicked, gives you the entire sentence (yes, it was a link for one whole sentence). I determined that it wasn't beneficial based on the time it would have taken to grab another HTML reference and come up with a way to extrapolate the rest of the sentence from that web page.
 - Another thing I could have done if given more time is to grab Fodor's the “best picks” and see if any of the places I displayed match the ones from that list. If any match, I could signify them as recommended picks.
4. If any web site was down or didn't have data, there's no recovery short of the program saying “no data found”. I didn't have multiple sources for the various types of data.
 - Given more time, I could have accessed another site for hotel data. It would take about 1-2 full days to do parse and then create the respective objects, array lists, etc. I'm not sure where I would get another location for “things to do”. I also had a hard time trying to get data from other car rental websites. Determining all the variables a web site needs and what the variables should be set to is tricky. Budget.com was number seven of my list of car rental places I tried. I tried one other airline with no luck (consequently airlines had at least twice as many variables required for doing queries).
5. My program only learns one person's interests. So, if another person used it on the same PC, it would update the same data files. Also, if you flew with a family verses flying alone (or with a companion), the interests may change. MIDAS doesn't take that into account.
6. If a web page format changed or if there were multiple ways of displaying the data on a website, my program won't be able to properly parse it. Life would be so much easier if these sites used OWL.
7. I narrowed the focus to Europe. If I wanted to add other countries, I would need a consistent source for determining the continent.
8. If the city, country combo didn't have an airport, my program would list every airport in that country. This can be a huge list. Ideally it should determine the closest airports, but I'm not sure at this point what source on the net to query for that. If I had to check multiple web pages for that, it would be extremely slow getting the best (or close match).
9. Fodors uses \$\$ type representation for price ranges and these were only for restaurants and hotels. There were no addresses for places or phone numbers on the pages I parsed, but someone visiting could always ask the hotel staff. Granted, I couldn't display photos, Fodors didn't have any photos for any of these places. Photos can help a user in making a decision of what hotel to choose or where to go.

RUN 1. Going to Madrid, Spain.

I didn't find any car information (Budget had no rentals for the date range).

I was okay with that. I can walk or take public transportation.

Enter the European country you are going to:

Spain

Enter the city you are going to:

Madrid

Searching for airports for Madrid, Spain.

Found MAD.

Enter the date you are leaving (mm/dd/yyyy format):

07/17/2009

Enter the date you are returning (mm/dd/yyyy format):

07/28/2009

How many adults are flying?

1

How many children are flying?

0

Check for flights from CVG to MAD.

The flight will cost \$5,184.80.

Pick a departure flight:

- 1) United 6173 CVGORD leaves:07/17/2009 8:52 AM and arrives:07/17/2009 9:08 AM
United 2303 ORDPHL leaves:07/17/2009 11:40 AM and arrives:07/17/2009 2:38 PM
United 2359 PHLMAD leaves:07/17/2009 6:30 PM and arrives:07/18/2009 8:00 AM
- 2) United 5698 CVGORD leaves:07/17/2009 12:14 PM and arrives:07/17/2009 12:31 PM
United 2486 ORDPHL leaves:07/17/2009 1:50 PM and arrives:07/17/2009 5:03 PM
United 2359 PHLMAD leaves:07/17/2009 6:30 PM and arrives:07/18/2009 8:00 AM
- 3) United 5698 CVGORD leaves:07/17/2009 12:14 PM and arrives:07/17/2009 12:31 PM
United 376 ORDPHL leaves:07/17/2009 1:51 PM and arrives:07/17/2009 4:59 PM
United 2359 PHLMAD leaves:07/17/2009 6:30 PM and arrives:07/18/2009 8:00 AM

3

Pick a return flight:

- 1) United 2175 MADPHL leaves:07/28/2009 12:35 PM and arrives:07/28/2009 3:00 PM
United 563 PHLORD leaves:07/28/2009 4:47 PM and arrives:07/28/2009 6:05 PM
United 7930 ORDCVG leaves:07/28/2009 9:13 PM and arrives:07/28/2009 11:22 PM
- 2) United 2175 MADPHL leaves:07/28/2009 12:35 PM and arrives:07/28/2009 3:00 PM
United 2132 PHLORD leaves:07/28/2009 5:55 PM and arrives:07/28/2009 7:17 PM
United 7930 ORDCVG leaves:07/28/2009 9:13 PM and arrives:07/28/2009 11:22 PM
- 3) United 2175 MADPHL leaves:07/28/2009 12:35 PM and arrives:07/28/2009 3:00 PM
United 1982 PHLCLT leaves:07/28/2009 6:40 PM and arrives:07/28/2009 8:35 PM
United 2869 CLTCVG leaves:07/28/2009 10:20 PM and arrives:07/28/2009 11:48 PM

1

No cars are available for that date. Do you want to continue?

y

Pick hotel budget preferences that interest you (enter 'd' when your done):

- 1) c - Cheap
- 2) \$ - Budget
- 3) \$\$ - Mid-range

- 4) \$\$\$ - Upscale
- 5) \$\$\$\$ - Expensive

2

d

Pick the hotel that interest you:

- 1) 7 Colors (\$-\$) - Barrio de las Letras and Santa Ana
- 2) Hostal Adriano (\$) - Sol and the Royal Palace
- 3) Mora (\$) - Barrio de las Letras and Santa Ana

1

Pick types of restaurants that interest you (enter 'd' when your done):

- 1) Chinese
- 2) Eclectic
- 3) French
- 4) German
- 5) Italian
- 6) Japanese
- 7) Mediterranean
- 8) Moroccan
- 9) Seafood
- 10) Spanish
- 11) Steak
- 12) Vegetarian

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5

d

Pick types of restaurants that interest you (enter 'd' when your done):

- 1) Asador Fronton I (\$\$\$) - [Spanish] - Lavapies and Anton Martin
- 2) Bokado (\$\$\$\$) - [Spanish] - Moncloa
- 3) Casa Benigno (\$\$\$) - [Spanish] - Chamartin and Tetuan
- 4) Casa Botin (\$\$\$) - [Spanish] - La Latina
- 5) Casa Ciriaco (\$\$) - [Spanish] - La Latina
- 6) Casa Lastra (\$\$) - [Spanish] - Lavapies and Anton Martin
- 7) Casa Mingo (c-\$) - [Spanish] - Moncloa
- 8) Charoles (\$\$\$-\$\$\$\$) - [Spanish] - El Escorial
- 9) El Lando (\$\$\$) - [Spanish] - La Latina
- 10) Goizeko Wellington (\$\$\$\$) - [Spanish] - Salamanca and Chamberi
- 11) Julian de Tolosa (\$\$\$) - [Spanish] - La Latina
- 12) La Ancha (\$\$-\$\$\$) - [Spanish] - Sol, Santa Ana and Barrio de las Letras
- 13) La Bola (\$\$-\$\$\$) - [Spanish] - Palacio
- 14) La Canada Real (\$\$) - [Spanish] - El Escorial
- 15) La Horizontal (\$\$) - [Spanish] - El Escorial
- 16) La Trucha (\$-\$) - [Spanish] - Sol, Santa Ana and Barrio de las Letras
- 17) Lhardy (\$\$\$\$) - [Spanish] - Sol, Santa Ana and Barrio de las Letras
- 18) Mercado de la Reina (\$\$) - [Spanish] - Chueca and Malasana
- 19) Meson de las Cuevas del Vino (\$\$-\$\$\$) - [Spanish] - Chinchon
- 20) Nueva Galicia (c) - [Spanish] - Sol, Santa Ana and Barrio de las Letras

- 21) Parador de Chinchon (El Convento) (\$\$\$) - [Spanish] - Chinchon
- 22) Paulino de Quevedo (\$\$) - [Spanish] - Salamanca and Chamberi
- 23) Pedro Larumbe (\$\$\$-\$\$\$\$) - [Spanish] - Salamanca and Chamberi
- 24) Sacha (\$\$\$) - [Spanish] - Chamartin and Tetuan
- 25) Taberna Bilbao (\$-\$) - [Spanish] - La Latina
- 26) Zalacain (\$\$\$\$) - [Spanish] - Salamanca and Chamberi
- 27) Casa Paco (\$\$\$) - [Steak] - La Latina
- 28) La Galette (\$\$) - [Vegetarian] - Salamanca and Chamberi
- 29) Boccondivino (\$\$\$) - [Italian] - Salamanca and Chamberi
- 30) Come Prima (\$\$\$) - [Italian] - Sol, Santa Ana and Barrio de las Letras
- 31) Pulcinella (\$-\$) - [Italian] - Chueca and Malasana

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d

Pick types of sites that interest you (enter 'd' when your done):

- 1) Archaeological Sites
- 2) Architectural Sites
- 3) Arts & Performance Venues
- 4) Castles & Palaces
- 5) Financial Institutions
- 6) Fountains
- 7) Gardens & Arboretums
- 8) Government Buildings
- 9) Houses & Mansions
- 10) Industrial Sites
- 11) Information Centers
- 12) Markets & Bazaars
- 13) Military Sites
- 14) Museums & Galleries
- 15) Neighborhoods & Streets
- 16) Parks
- 17) Religious Sites
- 18) Scenic Drives
- 19) Squares
- 20) Stores & Malls
- 21) Transportation Sites
- 22) Zoos & Aquariums

22

14

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d

Pick types of sites that interest you (enter 'd' when your done):

- 1) Zoo-Aquarium - [Zoos & Aquariums] - Old Madrid

- 2) CaixaForum - [Museums & Galleries] - Barrio de las Letras
- 3) Casa de Lope de Vega - [Museums & Galleries, Houses & Mansions] - Barrio de las Letras
- 4) Centro de Arte Reina Sofia - [Museums & Galleries] - Rastro and Lavapies
- 5) Museo Arqueologico - [Museums & Galleries] - Salamanca and Retiro
- 6) Museo del Prado - [Museums & Galleries] - Salamanca and Retiro
- 7) Museo del Traje - [Museums & Galleries] - Old Madrid
- 8) Museo Lazaro Galdiano - [Museums & Galleries] - Salamanca and Retiro
- 9) Museo Municipal - [Museums & Galleries] - Chueca and Malasana
- 10) Museo Municipal de Arte Contemporaneo - [Museums & Galleries] - Chueca and Malasana
- 11) Museo Naval - [Museums & Galleries] - Salamanca and Retiro
- 12) Museo Sorolla - [Museums & Galleries] - Chueca and Malasana
- 13) Museo Thyssen-Bornemisza - [Museums & Galleries] - Barrio de las Letras
- 14) Real Academia de Bellas Artes de San Fernando - [Museums & Galleries] - Old Madrid
- 15) Palacio Real - [Castles & Palaces] - Old Madrid

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d

Pick types of entertainment that interest you (enter 'd' when your done):

1) Arts Centers

2) Cabaret

3) Cafes

4) Concerts

5) Dance

6) Dance Clubs

7) Film

8) Music Clubs

9) Tapas Bars

10) Theater

11) Tickets

3

8

9

d

Pick types of entertainment that interest you (enter 'd' when your done):

1) Anglona - [Cafes] - Madrid

2) Areia - [Cafes] - Madrid

3) Cacao Sampaka - [Cafes] - Madrid

4) Cafe de Oriente - [Cafes] - Madrid

5) Cafe del Circulo - [Cafes] - Madrid

6) Cafe Gijon - [Cafes] - Madrid

7) Chocolateria San Gines - [Cafes] - Madrid

8) Delic - [Cafes] - Madrid

9) Diurno - [Cafes] - Madrid

10) El Jardin Secreto - [Cafes] - Madrid

11) Favorit - [Cafes] - Madrid

12) Gaudeamus Cafe - [Cafes] - Madrid

- 13) Maison Blanche - [Cafes] - Madrid
- 14) Bar Cock - [Music Clubs] - Madrid
- 15) Cafe Belen - [Music Clubs] - Madrid
- 16) Cafe Central - [Music Clubs] - Madrid
- 17) Cafe la Palma - [Music Clubs] - Madrid
- 18) Costello - [Music Clubs] - Madrid
- 19) Del Diego - [Music Clubs] - Madrid
- 20) El Clandestino - [Music Clubs] - Madrid
- 21) El Junco - [Music Clubs] - Madrid
- 22) El Viajero - [Music Clubs] - Madrid
- 23) Gaia - [Music Clubs] - Madrid
- 24) Krypton Bar - [Music Clubs] - Madrid
- 25) La Piola - [Music Clubs] - Madrid
- 26) Midnight Rose and The Penthouse - [Music Clubs] - Madrid
- 27) Museo Chicote - [Music Clubs] - Madrid
- 28) Oliver - [Music Clubs] - Madrid
- 29) Reina Bruja - [Music Clubs] - Madrid
- 30) Why not? - [Music Clubs] - Madrid
- 31) Bodega de la Ardosia - [Tapas Bars] - Madrid
- 32) Casa Lucas - [Tapas Bars] - Madrid
- 33) Casienhuertas - [Tapas Bars] - Madrid
- 34) El Almendro - [Tapas Bars] - Madrid
- 35) El Bocaito - [Tapas Bars] - Madrid
- 36) El Cervantes - [Tapas Bars] - Madrid
- 37) Estay - [Tapas Bars] - Madrid
- 38) Gastromaquia - [Tapas Bars] - Madrid
- 39) Juana la Loca - [Tapas Bars] - Madrid
- 40) Jurucha - [Tapas Bars] - Madrid
- 41) La Bardemcilla - [Tapas Bars] - Madrid
- 42) La Bodega de Lete - [Tapas Bars] - Madrid
- 43) La Dolores - [Tapas Bars] - Madrid
- 44) Laredo - [Tapas Bars] - Madrid
- 45) Matritum - [Tapas Bars] - Madrid
- 46) Taberneros - [Tapas Bars] - Madrid

7

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d

Your itinerary for this trip:

Flight cost: \$5,184.80

Leaving for Madrid, Spain:

United 2359 PHLMAD 07/17/2009 6:30 PM to 07/18/2009 8:00 AM

United 2359 PHLMAD 07/17/2009 6:30 PM to 07/18/2009 8:00 AM

United 2359 PHLMAD 07/17/2009 6:30 PM to 07/18/2009 8:00 AM

Returning from Madrid, Spain:

United 2175 MADPHL 07/28/2009 12:35 PM to 07/28/2009 3:00 PM

United 2175 MADPHL 07/28/2009 12:35 PM to 07/28/2009 3:00 PM

United 2175 MADPHL 07/28/2009 12:35 PM to 07/28/2009 3:00 PM

Car rental information:

Budget car rentals:

Hotel:

7 Colors (\$-\$\$) - Barrio de las Letras and Santa Ana

Restaurants:

Casa Mingo (c-\$) - [Spanish] - Moncloa

Taberna Bilbao (\$-\$\$) - [Spanish] - La Latina

Nueva Galicia (c) - [Spanish] - Sol, Santa Ana and Barrio de las Letras

Casa Paco (\$\$\$) - [Steak] - La Latina

La Galette (\$\$) - [Vegetarian] - Salamanca and Chamberi

Pulcinella (\$-\$\$) - [Italian] - Chueca and Malasana

Sights:

Zoo-Aquarium - [Zoos & Aquariums] - Old Madrid

Museo del Prado - [Museums & Galleries] - Salamanca and Retiro

Palacio Real - [Castles & Palaces] - Old Madrid

Museo Municipal de Arte Contemporaneo - [Museums & Galleries] - Chueca and Malasana

Nightlife:

Chocolateria San Gines - [Cafes] - Madrid

Estay - [Tapas Bars] - Madrid

Why not? - [Music Clubs] - Madrid

Midnight Rose and The Penthouse - [Music Clubs] - Madrid

Del Diego - [Music Clubs] - Madrid

El Jardin Secreto - [Cafes] - Madrid

Delic - [Cafes] - Madrid

Taberneros - [Tapas Bars] - Madrid

Laredo - [Tapas Bars] - Madrid

Saving the itinerary to: 07-17-2009_Madrid.txt

My Itinerary:

Flight cost: \$5,184.80
Leaving for Madrid, Spain:
United 2359 PHLMAD 07/17/2009 6:30 PM to 07/18/2009 8:00 AM
United 2359 PHLMAD 07/17/2009 6:30 PM to 07/18/2009 8:00 AM
United 2359 PHLMAD 07/17/2009 6:30 PM to 07/18/2009 8:00 AM
Returning from Madrid, Spain:
United 2175 MADPHL 07/28/2009 12:35 PM to 07/28/2009 3:00 PM
United 2175 MADPHL 07/28/2009 12:35 PM to 07/28/2009 3:00 PM
United 2175 MADPHL 07/28/2009 12:35 PM to 07/28/2009 3:00 PM
Car rental information:
Budget car rentals:
None
Hotel:
7 Colors (\$-\$\$) - Barrio de las Letras and Santa Ana
Restaurants:
Casa Mingo (c-\$) - [Spanish] - Moncloa
Taberna Bilbao (\$-\$\$) - [Spanish] - La Latina
Nueva Galicia (c) - [Spanish] - Sol, Santa Ana and Barrio de las Letras
Casa Paco (\$\$\$) - [Steak] - La Latina
La Galette (\$\$) - [Vegetarian] - Salamanca and Chamberi
Pulcinella (\$-\$\$) - [Italian] - Chueca and Malasana
Sights:
Zoo-Aquarium - [Zoos & Aquariums] - Old Madrid
Museo del Prado - [Museums & Galleries] - Salamanca and Retiro
Palacio Real - [Castles & Palaces] - Old Madrid
Museo Municipal de Arte Contemporaneo - [Museums & Galleries] - Chueca and Malasana
Nightlife:
Chocolateria San Gines - [Cafes] - Madrid
Estay - [Tapas Bars] - Madrid
Why not? - [Music Clubs] - Madrid
Midnight Rose and The Penthouse - [Music Clubs] - Madrid
Del Diego - [Music Clubs] - Madrid
El Jardin Secreto - [Cafes] - Madrid
Delic - [Cafes] - Madrid
Taberneros - [Tapas Bars] - Madrid
Laredo - [Tapas Bars] - Madrid

What the program learned from this run:

Hotel preferences (the ¢ gets translated to 'c' by the program)

\$ - Budget | 81
¢ - Cheap | 50
\$\$ - Mid-range | 50
\$\$\$ - Upscale | 50
\$\$\$\$ - Expensive | 50

Restaurant preferences

Spanish | 76
Steak | 75
Vegetarian | 75
Italian | 72
Chinese | 50
Eclectic | 50

French|50
German|50
Japanese|50
Mediterranean|50
Moroccan|50
Seafood|50

Site preferences

Zoos & Aquariums|76
Museums & Galleries|76
Castles & Palaces|76
Archaeological Sites|50
Architectural Sites|50
Arts & Performance Venues|50
Financial Institutions|50
Fountains|50
Gardens & Arboretums|50
Government Buildings|50
Houses & Mansions|50
Industrial Sites|50
Information Centers|50
Markets & Bazaars|50
Military Sites|50
Neighborhoods & Streets|50
Parks|50
Religious Sites|50
Scenic Drives|50
Squares|50
Stores & Malls|50
Transportation Sites|50

Nightlife preferences

Cafes|74
Music Clubs|74
Tapas Bars|74
Arts Centers|50
Cabaret|50
Concerts|50
Dance|50
Dance Clubs|50
Film|50
Theater|50
Tickets|50

Running again for Lisbon, Portugal

(By the way, YES, Budget listed renting a mini 2- or 4-door as 124999.98 ... I guess it's gold plated and it drives itself)

Enter the European country you are going to:

Portugal

Enter the city you are going to:

Lisbon

Searching for airports for Lisbon, Portugal.

Found LIS.

Enter the date you are leaving (mm/dd/yyyy format):

07/18/2009

Enter the date you are returning (mm/dd/yyyy format):

07/26/2009

How many adults are flying?

1

How many children are flying?

0

Check for flights from CVG to LIS.

The flight will cost \$3,774.50.

Pick a departure flight:

- 1) United 7919 CVGIAD leaves:07/18/2009 2:24 PM and arrives:07/18/2009 4:00 PM
United 918 IADLHR leaves:07/18/2009 6:00 PM and arrives:07/19/2009 6:20 AM
United 4639 LHRLIS leaves:07/19/2009 8:15 AM and arrives:07/19/2009 10:55 AM
- 2) United 7919 CVGIAD leaves:07/18/2009 2:24 PM and arrives:07/18/2009 4:00 PM
United 8826 IADFRA leaves:07/18/2009 5:45 PM and arrives:07/19/2009 7:35 AM
United 8846 FRALIS leaves:07/19/2009 9:40 AM and arrives:07/19/2009 11:35 AM
- 3) United 7417 CVGORD leaves:07/18/2009 3:30 PM and arrives:07/18/2009 3:47 PM
United 958 ORDLHR leaves:07/18/2009 5:00 PM and arrives:07/19/2009 7:10 AM
United 4639 LHRLIS leaves:07/19/2009 8:15 AM and arrives:07/19/2009 10:55 AM

1

Pick a return flight:

- 1) United 8862 LISFRA leaves:07/26/2009 7:05 AM and arrives:07/26/2009 11:00 AM
United 917 FRAIAD leaves:07/26/2009 12:20 PM and arrives:07/26/2009 3:06 PM
United 7885 IADCVG leaves:07/26/2009 5:10 PM and arrives:07/26/2009 6:50 PM
- 2) United 8862 LISFRA leaves:07/26/2009 7:05 AM and arrives:07/26/2009 11:00 AM
United 8827 FRAIAD leaves:07/26/2009 1:15 PM and arrives:07/26/2009 3:45 PM
United 7885 IADCVG leaves:07/26/2009 5:10 PM and arrives:07/26/2009 6:50 PM
- 3) United 4638 LISLHR leaves:07/26/2009 7:45 AM and arrives:07/26/2009 10:35 AM
United 919 LHRIAD leaves:07/26/2009 12:00 PM and arrives:07/26/2009 3:08 PM
United 7885 IADCVG leaves:07/26/2009 5:10 PM and arrives:07/26/2009 6:50 PM

1

Pick a type of car from Budget car rentals:

0) No car.

- 1) economy 2- or 4-door \$210.00
- 2) compact 2- or 4-door \$310.00
- 3) compact wagon/estate \$337.50
- 4) intermediate 2- or 4-door \$415.00

- 5) intermediate wagon/estate \$465.00
- 6) standard 4-door \$518.75
- 7) standard wagon/estate \$580.00
- 8) mini pass van \$775.00
- 9) full-size 4-door \$887.50
- 10) mini 2- or 4-door \$124999.98

2

Midas has found the following hotel budget preferences in Lisbon He has determined that you like the following:

\$ - Budget

Pick hotel budget preferences that interest you (enter 'd' when your done):

- 1) c - Cheap
- 2) \$\$ - Mid-range
- 3) \$\$\$ - Upscale
- 4) \$\$\$\$ - Expensive

2

d

Pick the hotel that interest you:

- 1) Albergaria Valbom (\$) - Estoril
- 2) Borges (\$) - Chiado
- 3) Casa da Pergola (\$) - Cascais
- 4) Casa de Sao Mamede (\$) - Rato
- 5) Casa Miradouro (\$-\$\$) - Sintra
- 6) Eduardo VII (\$-\$\$) - Saldanha
- 7) Estalagem Muchaxo (\$-\$\$) - Guincho
- 8) Flamingo (\$) - Liberdade
- 9) Florescente (c-\$) - Baixa
- 10) Hotel Lido (\$) - Estoril
- 11) Ibis (\$) - Liberdade
- 12) Pensao Londres (\$) - Bairro Alto
- 13) Albergaria Senhora do Monte (\$\$) - Graca
- 14) As Janelas Verdes (\$\$) - Lapa
- 15) Dom Carlos Liberty (\$\$) - Liberdade
- 16) Estoril Eden Apartamentos Suites Hotel (\$\$) - Estoril
- 17) Fenix (\$\$) - Amoreiras
- 18) Hotel Baia (\$\$) - Cascais
- 19) Hotel Tryp Oriente (\$\$) - Parque das Nacoes
- 20) Inglaterra (\$\$-\$\$\$) - Estoril
- 21) Jeronimos 8 (\$\$-\$\$\$) - Belem
- 22) Lisboa Plaza (\$\$) - Liberdade
- 23) Lisboa Regency Chiado (\$\$) - Chiado
- 24) Lisboa Sheraton & Towers (\$\$-\$\$\$) - Saldanha
- 25) Metropole (\$\$) - Baixa
- 26) Mundial (\$\$) - Baixa
- 27) Olissipo Castelo (\$\$) - Alfama
- 28) Pousada de Dona Maria I (\$\$) - Queluz
- 29) Praia Mar (\$\$) - Estoril
- 30) Quinta da Capela (\$\$) - Sintra

- 31) Quinta das Sequoias (\$\$) - Sintra
- 32) Sana Lisboa Park (\$\$) - Liberdade
- 33) Solar dos Mouros (\$\$-\$\$\$) - Alfama
- 34) Solplay (\$\$-\$\$\$\$) - Cascais
- 35) Tivoli Sintra (\$\$) - Sintra
- 36) VIP Executive Arts (\$\$) - Parque das Nacoes
- 37) VIP Executive Suites Eden (\$\$) - Baixa

30
 Midas has found the following types of restaurants in Lisbon He has determined that you like the following:

Vegetarian, and Italian

Pick types of restaurants that interest you (enter 'd' when your done):

- 1) Brazilian
- 2) Continental
- 3) Eclectic
- 4) Fast Food
- 5) French
- 6) Indian
- 7) Japanese
- 8) Mediterranean
- 9) Pizza
- 10) Portuguese
- 11) Russian
- 12) Seafood

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Pick types of restaurants that interest you (enter 'd' when your done):

- 1) Os Tibetanos (\$) - [Vegetarian] - Liberdade
- 2) Ristorante Hotel Cipriani (\$\$-\$\$\$\$) - [Italian] - Lapa
- 3) Dom Manolo (c-\$\$) - [Fast Food] - Cascais
- 4) Pizza Italia (\$-\$\$) - [Pizza] - Cascais
- 5) Cantinho da Paz (\$\$-\$\$\$) - [Indian] - Bairro Alto
- 6) Kais (\$\$-\$\$\$) - [Continental] - Santos

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Midas has found the following types of sites in Lisbon He has determined that you like the following:
 Zoos & Aquariums, Museums & Galleries, and Castles & Palaces

Pick types of sites that interest you (enter 'd' when your done):

- 1) Architectural Sites
- 2) Arts & Performance Venues

- 3) Bodies of Water
- 4) Bridges & Tunnels
- 5) Casinos
- 6) Gardens & Arboretums
- 7) Geological Sites
- 8) Houses & Mansions
- 9) Memorials & Monuments
- 10) Military Sites
- 11) Nature Preserves
- 12) Neighborhoods & Streets
- 13) Parks
- 14) Public Art (Mural & Sculpture & Statue)
- 15) Quick Bites
- 16) Religious Sites
- 17) Scenic Drives
- 18) Squares
- 19) Stores & Malls
- 20) Tours
- 21) Transportation Sites
- 22) Viewpoints
- 23) Wineries & Breweries

23

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Pick types of sites that interest you (enter 'd' when your done):

- 1) Jardim Zoologico - [Zoos & Aquariums] - Sete Rios
- 2) Oceanario de Lisboa - [Zoos & Aquariums] - Parque das Nacoes
- 3) Centro de Arte Moderna - [Museums & Galleries] - Sao Sebastiao
- 4) Galeria do Museu Municipal - [Museums & Galleries] - Sintra
- 5) Museu Calouste Gulbenkian - [Museums & Galleries, Arts & Performance Venues] - Sao Sebastiao
- 6) Museu da Farmacia - [Museums & Galleries] - Chiado
- 7) Museu da Marioneta - [Museums & Galleries] - Madragoa
- 8) Museu da Presidencia da Republica - [Museums & Galleries] - Belem
- 9) Museu de Arte Antiga - [Museums & Galleries] - Lapa
- 10) Museu de Marinha - [Museums & Galleries] - Belem
- 11) Museu do Brinquedo - [Museums & Galleries] - Sintra
- 12) Museu do Chiado - [Museums & Galleries] - Chiado
- 13) Museu do Mar - [Museums & Galleries] - Cascais
- 14) Museu dos Condes Castro Guimaraes - [Museums & Galleries, Houses & Mansions] - Cascais
- 15) Museu Exilio - [Museums & Galleries] - Estoril
- 16) Museu Militar - [Museums & Galleries] - Alfama
- 17) Museu Nacional do Azulejo - [Museums & Galleries] - Madre de Deus
- 18) Museu Nacional dos Coches - [Museums & Galleries] - Belem
- 19) Museu-Escola de Artes Decorativas - [Museums & Galleries] - Alfama
- 20) Pavilhao do Conhecimento - [Museums & Galleries] - Parque das Nacoes
- 21) Sintra Museu de Arte Moderna-Colecao Berardo - [Museums & Galleries] - Sintra

- 22) Castelo de Sao Jorge - [Castles & Palaces] - Alfama
- 23) Palacio da Ajuda - [Castles & Palaces] - Ajuda
- 24) Palacio dos Marqueses da Fronteira - [Castles & Palaces] - Sao Domingo de Benfica
- 25) Palacio Nacional de Pena - [Castles & Palaces] - Sintra
- 26) Palacio Nacional de Queluz - [Castles & Palaces] - Queluz
- 27) Palacio Nacional de Sintra - [Castles & Palaces] - Sintra
- 28) Instituto do Vinho do Porto - [Wineries & Breweries] - Bairro Alto
- 29) horse-and-carriage rides - [Tours] - Sintra
- 30) Boca do Inferno - [Geological Sites] - Cascais
- 31) Aqueduto das Aguas Livres - [Bodies of Water] - Campolide

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Midas has found the following types of entertainment in Lisbon He has determined that you like the following:

Cafes, and Music Clubs

Pick types of entertainment that interest you (enter 'd' when your done):

- 1) Art Galleries
- 2) Arts Centers
- 3) Bars
- 4) Dance Clubs
- 5) Festivals
- 6) Film
- 7) Music
- 8) Piano Bars & Lounges

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Pick types of entertainment that interest you (enter 'd' when your done):

- 1) Cafe A Brasileira - [Cafes] - Chiado
- 2) Cafe Martinho da Arcada - [Cafes] - Baixa
- 3) Cafe Nicola - [Cafes] - Baixa
- 4) Cha da Lapa - [Cafes] - Lapa
- 5) Confeiteira Cister - [Cafes] - Rato
- 6) Galeto - [Cafes] - Saldanha
- 7) Leitaria A Camponeza - [Cafes] - Baixa
- 8) Pastelaria Suica - [Cafes] - Baixa
- 9) Versailles - [Cafes] - Saldanha
- 10) Adega do Machado - [Music Clubs] - Bairro Alto
- 11) Adega do Ribatejo - [Music Clubs] - Bairro Alto

- 12) Clube de Fado - [Music Clubs] - Alfama
- 13) Hot Clube de Portugal - [Music Clubs] - Rato
- 14) Parreirinha d'Alfama - [Music Clubs] - Alfama
- 15) Pe Sujo - [Music Clubs] - Alfama
- 16) Ritz - [Music Clubs] - Bairro Alto
- 17) Senhor Vinho - [Music Clubs] - Lapa
- 18) Timpanas - [Music Clubs] - Alcantara
- 19) Fragil - [Dance Clubs, Piano Bars & Lounges] - Bairro Alto
- 20) Indochina - [Dance Clubs, Piano Bars & Lounges] - Rocha Conde de Obidos
- 21) Kapital - [Dance Clubs, Piano Bars & Lounges] - Santos
- 22) Keops - [Dance Clubs, Piano Bars & Lounges] - Bairro Alto
- 23) La Gloria Cubana - [Dance Clubs, Piano Bars & Lounges] - Alcantara
- 24) Lux - [Dance Clubs, Piano Bars & Lounges] - Alfama
- 25) Plateau - [Dance Clubs, Piano Bars & Lounges] - Santos
- 26) Galeria 111 - [Art Galleries] - Alvalade
- 27) Galeria Arte Periferica - [Art Galleries] - Belem
- 28) Galeria Barata - [Art Galleries] - Campo Grande
- 29) Galeria de Arte Cervejaria Trindade - [Art Galleries] - Bairro Alto
- 30) Galeria Novo Seculo - [Art Galleries] - Bairro Alto
- 31) Loja da Calçada - [Art Galleries] - Alfama
- 32) Movimento Arte Contemporanea - [Art Galleries] - Rato
- 33) Festival de Sintra - [Festivals] - Sintra

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Your itinerary for this trip:

Leaving for Lisbon, Portugal:

United 7919 CVGIAD 07/18/2009 2:24 PM to 07/18/2009 4:00 PM

United 7919 CVGIAD 07/18/2009 2:24 PM to 07/18/2009 4:00 PM

United 7919 CVGIAD 07/18/2009 2:24 PM to 07/18/2009 4:00 PM

Returning from Lisbon, Portugal:

United 8862 LISFRA 07/26/2009 7:05 AM to 07/26/2009 11:00 AM

United 8862 LISFRA 07/26/2009 7:05 AM to 07/26/2009 11:00 AM

United 8862 LISFRA 07/26/2009 7:05 AM to 07/26/2009 11:00 AM

Car rental information:

Budget car rentals: compact 2- or 4-door \$310.00

Hotel:

Quinta da Capela (\$\$) - Sintra

Restaurants:

Os Tibetanos (\$) - [Vegetarian] - Liberdade

Ristorante Hotel Cipriani (\$\$-\$\$\$\$) - [Italian] - Lapa

Dom Manolo (c-\$\$) - [Fast Food] - Cascais

Pizza Italia (\$-\$\$) - [Pizza] - Cascais

Cantinho da Paz (\$-\$\$\$) - [Indian] - Bairro Alto
Kais (\$-\$\$\$) - [Continental] - Santos
Sights:
Aquaduto das Aguas Livres - [Bodies of Water] - Campolide
Boca do Inferno - [Geological Sites] - Cascais
horse-and-carriage rides - [Tours] - Sintra
Jardim Zoologico - [Zoos & Aquariums] - Sete Rios
Oceanario de Lisboa - [Zoos & Aquariums] - Parque das Nacoes
Museu de Arte Antiga - [Museums & Galleries] - Lapa
Instituto do Vinho do Porto - [Wineries & Breweries] - Bairro Alto
Museu de Marinha - [Museums & Galleries] - Belem
Museu do Brinquedo - [Museums & Galleries] - Sintra
Nightlife:
Galeto - [Cafes] - Saldanha
Hot Clube de Portugal - [Music Clubs] - Rato
Versailles - [Cafes] - Saldanha
Galeria Arte Periferica - [Art Galleries] - Belem
Ritz - [Music Clubs] - Bairro Alto
Adega do Machado - [Music Clubs] - Bairro Alto
Adega do Ribatejo - [Music Clubs] - Bairro Alto
Saving the itinerary to: 07-18-2009_Lisbon.txt

Hotel preferences after 2nd run

\$ - Budget | 81
¢ - Cheap | 45
\$\$ - Mid-range | 61
\$\$\$ - Upscale | 45
\$\$\$\$ - Expensive | 45

Restaurant preferences after 2nd run

Spanish | 76
Steak | 75
Vegetarian | 80
Italian | 77
Chinese | 50
Eclectic | 45
French | 45
German | 50
Japanese | 45
Mediterranean | 45
Moroccan | 50
Seafood | 45
Fast Food | 75
Pizza | 75
Indian | 75
Continental | 75
Brazilian | 50
Portuguese | 50
Russian | 50

Sights preferences after 2nd run

Zoos & Aquariums|82
Museums & Galleries|80
Castles & Palaces|76
Archaeological Sites|50
Architectural Sites|45
Arts & Performance Venues|45
Financial Institutions|50
Fountains|50
Gardens & Arboretums|45
Government Buildings|50
Houses & Mansions|45
Industrial Sites|50
Information Centers|50
Markets & Bazaars|50
Military Sites|45
Neighborhoods & Streets|45
Parks|45
Religious Sites|45
Scenic Drives|45
Squares|45
Stores & Malls|45
Transportation Sites|45
Wineries & Breweries|75
Tours|75
Geological Sites|75
Bodies of Water|75
Bridges & Tunnels|50
Casinos|50
Memorials & Monuments|50
Nature Preserves|50
Public Art (Mural & Sculpture & Statue)|50
Quick Bites|50
Viewpoints|50

Nightlife preferences after 2nd run

Cafes|77
Music Clubs|80
Tapas Bars|74
Arts Centers|45
Cabaret|50
Concerts|50
Dance|50
Dance Clubs|45
Film|45
Theater|50
Tickets|50
Piano Bars & Lounges|70
Art Galleries|72
Festivals|70
Bars|50
Music|50