

# Flight search

## Problem

Your goal is to implement a simple flight search.

### Given

- airport of origin
- airport of destination
- date of departure
- number of adult, child and infant passengers

**When** you perform the search

**Then** you get the list of:

- flight code matching the route
- total flight price (for all passengers)

## Implementation considerations

We ask you to solve it using the **Java** programming language. You are only allowed to use test libraries (JUnit, TestNG, Hamcrest,...) and nothing else.

You are free to implement any mechanism for feeding input into your solution (for example, using hard coded data within a unit test).

Remember that the **automated and self-checking tests** are mandatory. You should provide sufficient evidence that your solution is complete by, as a

minimum, indicating that it works correctly against the supplied test data.

We kindly ask you to put your code on a public project in `github.com` under your account. Use Maven or Gradle as automation tool and link it to a build service like Travis CI.

## What we value most?

The goal is to provide us with a full understanding of your coding style and skills. We'll pay particular attention to:

- readable and well-structured code
- design and domain modelling
- quality of tests

## Business rules and constraints

- Search only for direct flights (no stopovers)
- Assume there is always seat availability
- All flights leave every day
- There is only one currency (€)

## Pricing rules

### Days to departure date

days prior to the departure date	% of the base price
more than 30	80%
30 - 16	100%

days prior to the departure date	% of the base price
15 - 3	120%
less than 3	150%

## Passenger type

passenger type	price
adult	full price (i.e. price resulting from the <i>days to departure date</i> rule)
child	33% discount of the price calculated according to the <i>days to departure date</i> rule
infant	fixed price depending on the airline. Rule <i>days to departure date</i> is not applied for infants

## Examples

- 1 adult, 30 days to the departure date, flying AMS -> FRA

flights:

- TK2372, 157.6 €
- TK2659, 198.4 €
- LH5909, 90.4 €

- 2 adults, 1 child, 1 infant, 15 days to the departure date, flying LHR -> IST

flights:

- TK8891, 806 € (2 \* (120% of 250) + 67% of (120% of 250) + 5)
- LH1085, 481.19 € (2 \* (120% of 148) + 67% of (120% of 148) + 7)

- 1 adult, 2 children, 2 days to the departure date, flying BCN -> MAD

flights:

- IB2171, 909.09 € (150% of 259 + 2 \* 67% of (150% of 259))
- LH5496, 1028.43 € (150% of 293 + 2 \* 67% of (150% of 293))

- CDG -> FRA

no flights available

## Additional data

### Airports

IATA code	city
MAD	Madrid
BCN	Barcelona
LHR	London
CDG	Paris
FRA	Frakfurt
IST	Istanbul
AMS	Amsterdam
FCO	Rome
CPH	Copenhagen

### Airlines with infant prices

IATA code	name	infant price
IB	Iberia	10 €
BA	British Airways	15 €
LH	Lufthansa	7 €
FR	Ryanair	20 €
VY	Vueling	10 €
TK	Turkish Airlines	5 €
U2	Easyjet	19.90 €

## Flights

In CSV format

```
origin,destination,airline,base price (€)
CPH,FRA,IB2818,186
CPH,LHR,U23631,152
CDG,MAD,IB8482,295
BCN,FRA,FR7521,150
CPH,FCO,TK4667,137
CPH,FCO,U24631,268
FCO,CDG,VY4335,158
LHR,IST,TK8891,250
FRA,AMS,U24107,237
CPH,BCN,U22593,218
BCN,IST,VY9890,178
AMS,CPH,TK4927,290
FCO,MAD,BA1164,118
CPH,LHR,BA7710,138
BCN,AMS,U24985,191
MAD,CDG,IB9961,128
LHR,FRA,LH2118,165
IST,FRA,IB8911,180
AMS,FRA,TK2372,197
FRA,IST,LH4145,169
MAD,CDG,IB6112,112
CPH,FRA,LH1678,298
LHR,CPH,LH6620,217
MAD,LHR,TK4199,186
MAD,CDG,IB7403,253
FRA,CPH,BA4369,109
BCN,MAD,IB2171,259
```

IST,LHR,LH6412,197  
IST,MAD,LH1115,160  
LHR,LHR,VY8162,285  
FRA,LHR,BA8162,205  
AMS,FCO,BA7610,168  
LHR,IST,LH1085,148  
FCO,FRA,U21423,274  
CPH,MAD,U23282,113  
CDG,CPH,LH5778,263  
CPH,CDG,BA2777,284  
BCN,LHR,TK4375,208  
MAD,FCO,LH8408,149  
AMS,IST,IB4563,109  
LHR,FCO,LH5174,251  
MAD,BCN,BA9569,232  
AMS,FRA,TK2659,248  
LHR,CDG,IB2771,289  
IST,MAD,IB8688,150  
CPH,AMS,TK8355,137  
FCO,CDG,VY2974,111  
AMS,FRA,LH5909,113  
CPH,BCN,FR7949,176  
BCN,CPH,U27858,237  
FRA,AMS,LH2320,288  
LHR,BCN,VY4633,149  
AMS,IST,IB7289,163  
FRA,LHR,IB9443,254  
IST,FCO,LH4948,176  
IST,BCN,TK5558,211  
BCN,BCN,BA9409,215  
IST,AMS,FR9261,267  
CDG,IST,IB7181,227  
LHR,BCN,TK1446,217  
FCO,FRA,TK2793,175  
AMS,CPH,FR1491,284  
IST,BCN,IB9219,279  
MAD,AMS,TK7871,159  
FCO,AMS,VY4840,260  
MAD,FRA,BA8982,171  
IST,LHR,U23526,254  
FRA,MAD,BA6773,157  
CDG,CPH,IB5257,299  
CPH,CDG,LH8545,230  
LHR,AMS,IB4737,110  
BCN,MAD,LH5496,293  
CDG,LHR,U29718,103  
LHR,AMS,BA9561,253  
FRA,LHR,TK3167,118  
IST,FRA,FR4727,108  
CPH,IST,LH6320,115  
LHR,AMS,BA6657,122  
LHR,FRA,TK5342,295  
IST,LHR,IB4938,226  
CDG,BCN,VY9791,289  
MAD,LHR,IB4124,272  
FRA,MAD,BA7842,121  
AMS,FCO,VY5092,178  
CDG,LHR,BA9813,171  
FRA,IST,BA2421,226  
IST,CPH,U28059,262  
MAD,AMS,LH7260,191

CDG,CPH,TK2044,186