Dear Candidate,

The following is a simulation of a simplified real life problem that is faced by a Garner customer every year. We would like you to develop code that solves this problem, package it with instructions, and deliver it to us in such a way that we can easily execute and inspect the code. If you have used a IDE please say so explicitly.

There are a few things to keep in mind before you begin:

Quality trumps speed! The point with this exercise it is not to race to a solution but to show us the **best** code that you are capable of writing. We would expect this is something you would work on in your spare time over a couple of days.

Do not use any libraries, proprietary or open source. Please ensure that all code is **original** and your **own**. The only exception to that rule is using the standard (runtime) library for your language of choice and the related automated testing library (e.g.: JUnit in Java.)

Do state your assumptions. If you feel there is something you cannot make a reasonable assumption about then you can email me and I will get the answers to you.

Do provide automated tests where appropriate.

It would be ideal if you were to programme in Scala but Java would be fine too. Failing that, you can use Ruby, Python or C#. In any case use the language among those aforementioned that you are most comfortable with.

We are aware that you have to dedicate time to this kind of exercise and we fully appreciate your being willing to do so. Our hope is that you will also get some enjoyment out of working on a problem that does actually have some relevance to the real world. We look forward to reading your response.

And now to the problem....

The Ice Road

The ice road from Yellowknife to the mines north of it is open only 60 days per year, opening on Feb 1st at 8am local time. On a good season, up to 10000 shipments need to be delivered to the mines, mostly made of fuel, parts and other supplies. Shipments can be scheduled on the road up to 7 per hour, 24/7.
The road can sustain only shipments weighing up to 15000 Kg in the first 15 days.
Some shipments are more urgent than others and in general they are assigned either no or 1-3 priority (with 1 being more urgent than 2 and 2 more urgent than 3).

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Design a system that schedules the shipment on the road so that:

- In the first 15 days only shipments up to 15 tons are delivered, based on priority and weight (lighter loads first)
- After that, deliver all 15+ tons shipments by priority and then weight (heavier loads first), and then all remaining shipments, prioritized the same way

The list of shipments is represented as a CSV file with the following format:

```
id,description,weight,unit,priority
1,cement,15.5,ton,1
5,fuel,40000,kg,2
27,drill bits,17000,lbs,
135,prill,17000,kg,1
8,fuel,10000,kg,
89,fuel,8,ton,3
47,wet bulk freight,22,ton,
24,fuel,10.5,ton,2
29,steel bars,12250,kg,3
68,cement,22800,lbs,2
51,wet bulk freight,42.28,ton,3
76,fuel,23455,kg,2
14,explosives,14000,kg,3
6,fuel,4128,kg,2
64,steel bars,3000,lbs,1
1832,cement,24000,kg,1
826,prill,10000,kg,1
41,fuel,23.6,ton,3
3827,cement,22000,kg,2
495,explosives,8900,kg,3
...
```

The resulting schedule is represented as another CSV file with the following format:

```
day,hour,slot,id
2015-02-01,08:00,1,64
2015-02-01,08:00,2,826
2015-02-01,08:00,3,6
2015-02-01,08:00,4,68
2015-02-01,08:00,5,24
2015-02-01,08:00,6,89
2015-02-01,08:00,7,495
2015-02-01,09:00,1,29
2015-02-01,09:00,2,14
2015-02-01,09:00,3,27
...
2015-02-16,00:00,1,1832
2015-02-16,00:00,2,135
2015-02-16,00:00,3,1
2015-02-16,00:00,4,5
2015-02-16,00:00,5,76
2015-02-16,00:00,6,3827
2015-02-16,00:00,7,51
```

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```
2015-02-16,01:00,1,41
2015-02-16,01:00,2,47
2015-02-16,01:00,3,8
...
```

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