Homework assignment
L6: IRT models for binary data

Assignment date:	**13.11.2018**
Deadline:	**19.11.2018**
Slides:	http://www.cs.cas.cz/martinkova/NMST570
Note:	Send answers and screenshots to drabinova@cs.cas.cz
Name:	

1   Training in ShinyItemAnalysis

Run `ShinyItemAnalysis` online or locally.

Ex. 1.1   Finish Exercise 1 in IRT/Training/Dichotomous models tab. Provide proof (screenshot). [4]

Ex. 1.2   Finish Exercise 2 in IRT/Training/Dichotomous models tab. Provide proof (screenshot). [1.25]

Ex. 1.3   Finish Exercise 3 in IRT/Training/Dichotomous models tab. Provide proof (screenshot). [1.25]

2   Real data analysis

Ex. 2.1   The EPI is a very frequently administered personality test with 57 items measuring two broad dimensions, Extraversion-Introversion and Stability-Neuroticism, with an additional Lie scale. Download E score data (24 items) available at

> http://www.cs.cas.cz/drabinova/documents/epi_escore.csv

Upload data into `ShinyItemAnalysis` and answer following questions:

1. How many observations does data consist of? [0.25]

2. Which items are included in E-score part? [0.25]

3. Fit Rasch model.

   - Which is the easist item? [0.25]
   - Which is the most difficult one? [0.25]
   - What is the correlation between standardized total scores and factor scores? How do you interpret the result? [0.5]

4. Fit 1PL IRT model.

   - How does the estimate of discrimination in this model differ from Rasch model? Briefly comment. [0.5]

   - Which item is the most informative? [0.25]

5. Fit 2PL IRT model.

   - Which items do have negative discrimination? Read their wording and try to explain. [0.75]

   - What is the most informative item? [0.25]
   - What is the correlation between standardized total scores and factor scores? [0.25]

NOTE: Data `epi_escore` is binary. Use **Keep item names** option for easier interpretation. You can find wording of the items in `epi.dictionary` data of `psych` package.

3   Provide feedback

Here you can provide feedback on lecture, lab session and/or materials (slides, HW assignment, ShinyItemAnalysis manual) [1pt bonus] :)