Data Types - Solutions

We discussed the inherent data type of an attribute, including the TNOIR and further considerations in class.

- For each of the following examples, discuss which TNOIR data type it has.
- For every numerical value (interval, ratio) state if it is discrete or continuous
- Discuss any further special properties.

Answer the questions in teams of 2 to 4 students

Examples

1) Country of Origin: Germany, Austria, Spain, …
   → Nominal
2) BMI (Body Mass Index)
   → Interval. Inherently continuous, however, height and weight are usually rounded (to cm / kg), leading to discrete values in practice.
3) Income
   → depends!
   * Ratio if it is a number in a currency like EUR or $. Discrete (probably given in full EUR, or maybe cent), maybe continuous for e.g. cryptocurrencies
   * Ordinal if it is "low, medium, high"
4) Score on an IQ test: 85, 100, 130, 115, …
   → Interval, discrete or ordinal
5) Number of students in a class
   → Ratio, discrete
6) Car Brand
   → Nominal
7) Time (of/within a day): 2:30, 14:45, 8:00, …
   → Interval, discrete
8) Pain Level on a scale of 0 (no pain) to 10 (extremely painful)
   → Ordinal
9) Favorite Mythical Creature: Dragon, Unicorn, Phoenix, Griffin, …
   → Nominal
10) Genre of Music
    → Nominal
11) Number of steps taken in a day
    → Ratio, discrete
12) Satisfaction Score on a 10-point scale
    → Ordinal, discrete
13) Liters of water consumed in a day
    → Ratio, inherently continuous, may be stored in a discrete number
14) Wine quality rating: fair, good, very good, excellent
    → Ordinal
15) Month in a Year: January, February, …, December
    → Interval (!!!), encoded as a technical data type String, discrete (ordinal can be justified)
16) Quantity of Magic Potions: 1 potion, 2 potions, 3 potions, 4 potions, …
    → Ratio, discrete
17) Virtual Reality Immersion Levels: 10%, 20%, 30%, 40%, …
    → Interval, probably discrete as only certain levels will be defined; could also be ordinal
18) Level of autonomy of a self-driving vehicle
    → Ordinal, encoded as technical data type Integer
19) Imaginary Friend Interaction Frequency: 5 times/month, 10 times/month, 15 times/month, 20 times/month, …
    → Ratio, discrete
20) Speed of a Car: 60 km/h, 80 km/h, 100 km/h, 120 km/h
    → Ratio, inherently continuous; probably stored discrete as rounded to integer numbers