Question **1**

Answer saved

Marked out of 3.00

Imagine you are reading the sales brochure of a well-known discounter. In the brochure you find the following offer: **1 jar of Nutella, 400 grams, only 99 cents**

With regard to this offer, assign the terms data, information and knowledge to the following descriptions.

Note: Nutella is a sweet, creamy spread, commonly used on bread, pancakes, or in desserts.

The fact that I should buy Nutella now because the price is low right now.	Information
The fact that a jar of nut-nougat cream of a certain weight is offered at a certain price.	Knowledge
The string '1 jar of Nutella, 400 grams, only 99 cents' on a syntactic level.	Data

Question **2**

Answer saved

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Which of the following statements about the evaluation of information retrieval systems and database systems are true?

- [ ] IR systems can only be evaluated regarding their processing speed.
- [ ] IR systems cannot be evaluated.
- [x] The evaluation of DB systems typically refers to the runtime and memory efficiency of the system.
- [ ] The evaluation of DB systems is always impossible, because there are no quantifiable quality criteria for available for relational data.
- [x] The evaluation of IR systems is about comparing the quality of the results of different IR systems or the configuration/optimization of a single IR system.

Question **3**

Answer saved

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Assign the correct term (relevance, precision or recall) to the corresponding definition!

Describes whether or not a document is of importance for the fulfillment of a user's information request.	Relevance
Expresses the ability of an information retrieval system to deliver relevant documents in the result set, i.e., what is the proportion of relevant documents in the result relative to all relevant documents in the entire document collection. (How complete is the answer?)	Recall
Indicates the ratio of relevant documents found among all found documents, i.e. how well is an information retrieval system able to, to deliver only relevant documents in the result set. How accurate is the answer?	Precision

Question **4**

Answer saved

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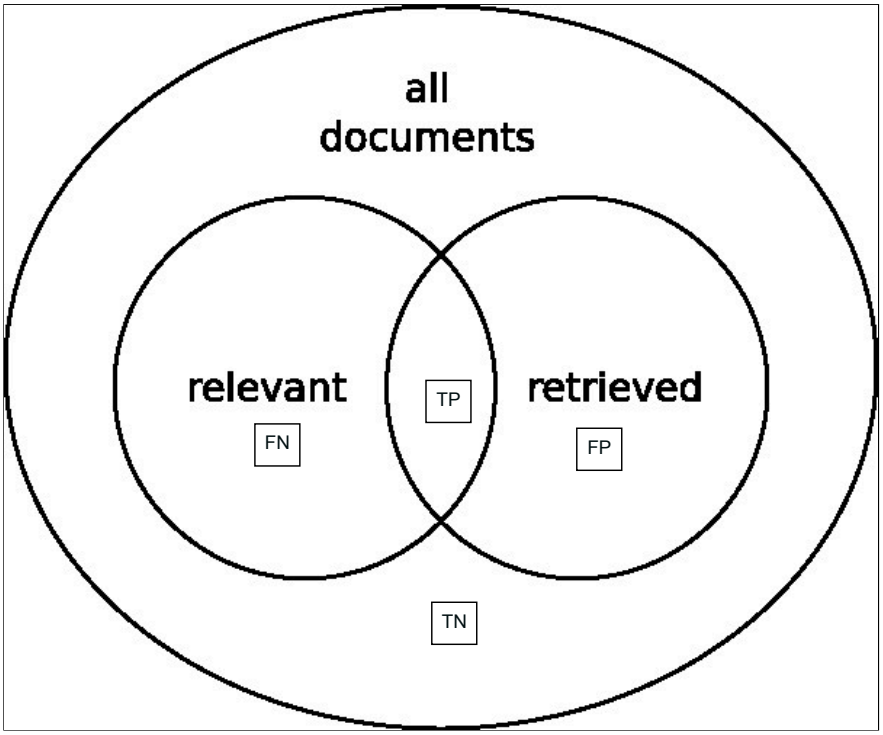
IR systems are often evaluated with recall and precision. The formulas for recall and precision can be defined as:

- Recall = TP/TP+FN
- Precision = TP/TP+FP

(TP = true positives, FP = false negatives, TN = true negatives, FN = false negatives)

Knowing this, what do TP, FP, TN and FN mean with regard to found/relevant documents? To answer this, assign the four terms to the following Venn diagram.



Question **5**

Answer saved

Marked out of 6.00

Below you will find eight statements. For each statement, select whether it refers to Micro Assessment or Macro Assessment.

Queries with a larger result set are weighted more heavily in the overall result.	Micro Assessment
This approach determines the average recall and precision values as true mean values, i.e. the sum of the individual values is divided by the number of experiments.	Macro Assessment
This approach considers the sum of the individual queries as one large query.	Micro Assessment
Individual queries that return an empty set as a result do not pose a problem, as these can be included in the result.	Micro Assessment
Precision results in 0 in the denominator if the result is empty (a + b).	Macro Assessment
All results are weighted equally, which may lead to bias. Queries that return many results and thus have a high informative value about the quality of the system are equally weighted as results that return only one relevant document and thus achieve a Precision of 100%.	Macro Assessment
$Recall = \frac{\sum_{i=1}^{m} a_i}{\sum_{i=1}^{m} (a_i + c_i)}, Precision = \frac{\sum_{i=1}^{m} a_i}{\sum_{i=1}^{m} (a_i + b_i)}$	Micro Assessment
$Recall = \frac{1}{m} * \sum_{i=1}^{m} \frac{a_i}{a_i + c_i}, Precision = \frac{1}{m} * \sum_{i=1}^{m} \frac{a_i}{a_i + b_i}$	Macro Assessment

Question **6**

Answer saved

Marked out of 4.00

Using the two approaches to averaging, determine Recall and Precision for the queries listed below. Write percentages as decimal points. The results should be accurate to 2 decimal places.

Query	Result size (a+b)	a+c	a
1	27	12	4
2	31	13	6
3	58	28	13
4	70	23	15

(Macro Assessment) Recall:

0.48

(Macro Assessment) Precision:

0.19

(Micro Assessment) Recall:

0.50

(Micro Assessment) Precision:

0.20

Question **7**

Answer saved

Marked out of 4.00

Once again, use the two approaches to averaging to determine Recall and Precision for another set of queries - they are listed below.

Again, write percentages as decimal points and the results should be accurate to 2 decimal places.

Query	Result size (a+b)	a+c	a
1	80	5	1
2	80	21	7
3	80	26	11
4	80	31	19

(Macro Assessment) Recall:

0.39

(Macro Assessment) Precision

0.12

(Micro Assessment) Recall:

0.46

(Micro Assessment) Precision:

0.12

Question **8**

Answer saved

Marked out of 6.00

Select the correct/fitting terms in the following text about recall calculation:

Calculating recall in practice is hard, because in order to do so, we need the amount of misses (c), in other words the relevant, but not found documents. Therefore there exist a variety of methods of which four were discussed in the lecture:

- The simplest one is to use a representative sample . The problem here is, that it has to be big enough to reach statistical significance, as the proportion of relevant documents will be small compared to the number of all documents.
- Another idea is the document source method. Here we select a random document from the document collection and formulate a search query, to which the selected document should be relevant. It is however questionable, whether such "artificial" queries correspond to real queries.
- The most popular approach is the query extension method, where we take a query and add elements so that a superset of the original answer is found. For simplicity, it is now assumed that the extended answer set obtained in this way certainly contains all documents relevant to the original query, and can thus calculate the recall for the original query. There are still various problems with this approach.
- Probably one of the best methods is the usage of external sources . Completely independent of the IR system in question, one tries to determine the relevance of documents externally. For example, the average users or experts can be questioned. The problem here is the enormous effort involved.

◀ Practical Task 1 - Diagram Upload

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