

ΣΥΣΤΗΜΑΤΑ ΑΝΑΚΤΗΣΗΣ ΠΛΗΡΟΦΟΡΙΩΝ

ΕΡΓΑΣΙΑ ΜΕΡΟΣ 1°

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1. Προεπεξεργασία κειμένων

Πακέτο "conversion_and_command"

Κλάση XMLtoJSON:

Αρχικά μέσω τους **gatherDocs()** συλλέγονται τα κείμενα από τη δοσμένη συλλογή Parsed Files. Έπειτα η μέθοδος **readXML()** διαβάζει ένα ένα τα αρχεία xml και τα αποθηκεύει ως Strings στον πίνακα **rcns[]**. Στο τέλος η μέθοδος **readXML** καλεί την **fixTags(String[] rcNs)** η οποία αντικαθιστά τα tags "title" και "objective" σε "text" του οποίου το περιεχόμενο είναι το περιεχόμενο των προηγούμενων 2 μαζί. Επόμενο βήμα είναι εκείνο τους μετατροπής κάθε αρχείου σε JSON μέσω τους μεθόδου **convertToJSON()** (χρησιμοποιώντας τη μέθοδο του εργαστηρίου "XML.toJSONObject(data)"). Τέλος, τα αρχεία που μόλις μετατράπηκαν σε JSON αποθηκεύονται στην τοποθεσία **Values.saveLocation** μέσω τους μεθόδου **save(JSONObject[] arr)** και τους **writeValues(JSONObject[] arr, int counter, String fname)**

Κλάση KibanaCommands:

Η κλάση αυτή δημιουργήθηκε με σκοπό την παραγωγή τους bulk εντολής για τα 18.316 αρχεία, διότι αντιμετώπισα πρόβλημα στο bulk upload και με το REST api, και με το api τους python, και με το Logstash

Η κλάση αυτή βασίζεται σε 3 μεθόδους. Οι μέθοδοι **createIndexId(int id)** και **item(String jsonObject, int id)** είναι βοηθητικές για τη σύνταξη τους εντολής – η πρώτη παράγει τη φράση { "index ": { "_id " : "n" }} και η δεύτερη τοποθετεί το περιεχόμενο του αντίστοιχου αρχείου JSON από κάτω. Η Τρίτη μέθοδος, η **writePOSTCommands()** εμπλουτίζει μια συμβολοσειρά που ξεκινά με την εντολή POST και συνεχίζει με τα 18.316 αρχεία. Στο τέλος παράγεται το αρχείο με την ολοκληρωμένη εντολή POST "KibanaPOST.txt"

Κλάση Values:

Περιέχει απαραίτητα πεδία για διάβασμα και αποθήκευση αρχείων (τα paths) καθώς και τους πληροφορίες τους αριθμός αρχείων, πληροφορίες του project κλπ.

Κλάση Preprocessing: Η Main

2. Δημιουργία ευρετηρίου

Επόμενο βήμα είναι η δημιουργία ευρετηρίου με τον κατάλληλο analyzer(English analyzer) και την απόδοση βάρους BM25:

```
PUT /index_trikalis_christos
{
  "settings": {
    "similarity": {
      "bm25-similarity": {
        "type": "BM25",
        "b": 1.0
      }
    },
    "analysis": {
      "filter": {
        "english_stop": {
          "type": "stop",
          "stopwords": "_english_"
        },
        "english_keywords": {
          "type": "keyword_marker",
          "keywords": ["example"]
        },
        "english_stemmer": {
          "type": "stemmer",
          "language": "english"
        },
        "english_possessive_stemmer": {
          "type": "stemmer",
          "language": "possessive_english"
        }
      },
      "analyzer": {
        "rebuilt_english": {
          "tokenizer": "standard",
          "filter": [
            "english_possessive_stemmer",
            "lowercase",
            "english_stop",
            "english_keywords",
            "english_stemmer"
          ]
        }
      }
    }
  }
}
```

```
1 {
2   "acknowledged" : true,
3   "shards_acknowledged" : true,
4   "index" : "index_trikalis_christos"
5 }
6
```

3. Batch Processing (bulk upload)

Πλέον αφού έχω δημιουργήσει τον index και έχοντας το αρχείο με την εντολή `POST index/_doc/_bulk` και για τα 18.316 αρχεία, τρέχω την εντολή στην Κονσόλα του Kibana:

(προηγουμένως έχω αλλάξει το `maxPayload` στο αρχείο `kibana.yml` ώστε να δέχεται το συγκεκριμένο payload που είναι μεγαλύτερο από το default)

```
POST /index/trikalis_christos/_doc/_bulk?pretty
{"index":{"_id":"0"}}
{"project":{"identifier":"H2020Adhoc201420","xmlns":"http://cordis.europa.eu","acronym":"ERC-EuropePMC-1-2014","text":"Support towards the Europe PMC initiative-Contribution for 2014-2016 | \\\"The proposed action will provide continued support to the European Research Council (ERC) in the implementation of its Open Access strategy for projects funded in the Life Sciences domain. It follows on from the project \\\"\\\"Support towards the Europe PMC initiative-Contribution for 2013\\\"\\\"(ERC-EuropePMC-SUP-2013) which has allowed the ERC to offer the benefits of Europe PMC to its funded researchers for the first time in 2013. The ERC Open Access strategy, and how the present project will assist the ERC in its implementation, is explained below\\\"\\\"","rcn":193157}}
{"index":{"_id":"1"}}
{"project":{"identifier":"H2020Adhoc201420","xmlns":"http://cordis.europa.eu","acronym":"ERCSC-VPRES-SUP2014","text":"Support to the Vice-Presidents of the ERC Scientific Council 2014 | The proposed Action will provide the necessary support to the Vice-Presidents of the European Research Council Scientific Council (ERC ScC) to achieve key
:
■
■
■
{"index":{"_id":"18315"}}
{"project":{"identifier":"H2020SFS20172","xmlns":"http://cordis.europa.eu","acronym":"SMARTCHAIN","text":"Towards Innovation - driven and smart solutions in short food supply chains | SMARTCHAIN is an ambitious, 3 year project with 43 partners from 11 European countries including key stakeholders from the domain of short food supply chain as actors in the project. The central objective is to foster and accelerate the shift towards collaborative short food supply chains and , through concrete actions and recommendations, to introduce new robust business models and innovative practical solutions that enhance the competitiveness and sustainability of the European agri-food system.Using bottom-up, demand-driven research, the SMARTCHAIN consortium i) will perform a multi-perspective analysis of 18 case studies of short food supply chains in terms of
:
■
```

(δεν παρέχεται acknowledgement. Ακολουθεί εντολή ανάκτησης συγκεκριμένου document για επιβεβαίωση ότι ανέβηκαν και τα 18316)

_doc/18315
(τα id ξεκινάνε από το 0)

```
GET index_trikalis_christos/_doc/18315
{
  "_index" : "index_trikalis_christos",
  "_type" : "_doc",
  "_id" : "18315",
  "_version" : 1,
  "_seq_no" : 18315,
  "_primary_term" : 1,
  "found" : true,
  "_source" : {
    "project" : {
      "identifien" : "H2020SFS20172",
      "xmlns" : "http://cordis.europa.eu",
      "acronym" : "SMARTCHAIN",
      "text" : "Towards Innovation - driven and smart solutions in short food supply chains | SMARTCHAIN is an ambitious, 3 year project with 43 partners from 11 European countries including key stakeholders from the domain of short food supply chain as actors in the project. The central objective is to foster and accelerate the shift towards collaborative short food supply chains and, through concrete actions and recommendations, to introduce new robust business models and innovative practical solutions that enhance the competitiveness and sustainability of the European agri-food system.Using bottom-up, demand-driven research, the SMARTCHAIN consortium i) will perform a multi-perspective analysis of 18 case studies of short food supply chains in terms of technological, regulatory, social, economic and environmental factors, ii) will assess the linkages and interactions among all stakeholders involved in short food supply chains and iii) will identify the key parameters that influence sustainable food production and rural development among different regions in Europe .The project aims to establish 9 national communities of short food supply chains (Innovation and Collaboration Hubs) in different partner countries (France, Germany, Greece, Hungary, Italy, Netherlands, Serbia, Spain and Switzerland) and a virtual innovation hub in order to facilitate stakeholder engagement, bringing farmers and consumers together in a trust-enhancing environment enabling them to generate demand driven-innovations.Comboination of scientific and practical knowledge and the use of innovation workshops will enable the development of practical innovative solutions as well as the promotion of a framework for different forms of collaborative short food supply chains in urban and rural areas. SMARTCHAIN will generate concrete actions for knowledge transfer, through the organisation of multi-stakeholder workshops and training activities for farmers and short food supply chain entrepreneurs.",
      "rcn" : 215956
    }
  }
}
```

4. Κανονικοποίηση των ερωτημάτων

Πακέτο “queries_normalization”: επειδή τα κείμενα που τίθενται ως ερωτήματα, έχουν χαρακτήρες που δεν μπορούν να γίνουν parse από τον elastic, πρέπει να γίνει tokenize-normalization.

Κλάση Normalization:

Στην κλάση αυτή , υπάρχει η μέθοδος **readQueriesTxt()** η οποία διαβάζει το αρχείο με τα ερωτήματα, αφαιρεί τα μεγάλα κενά και το forward slash και αποθηκεύει ένα-ένα τα ερωτήματα στον πίνακα **parts[]**. Έπειτα η μέθοδος **saveNormalizedQueries()** αποθηκεύει τα queries σε ξεχωριστά txt αρχεία.

Κλάση Values:

Ο ρόλος της είναι ίδιος με την κλάση Values στο πακέτο **conversion_and_command**

5. Queries

Όσον αφορά τα queries, η μορφή είναι η εξής:

```
POST index_trikalis_christos/_search
{
  "query" : {
    "query_string": {
      "query": "κείμενο ως ερώτημα "
    }
  },
  "from": 1,
  "size": 21
}
```

(from και size αφορά τον αριθμό των documents που θα ανακτηθούν.
Ξεκινάω από το 1, γιατί επειδή τα ερωτήματα είναι κείμενα τους συλλογής,
το πρώτο κείμενο που θα ανακτήσουν θα είναι ο εαυτός τους- δηλαδή κάθε
φορά το document 0)

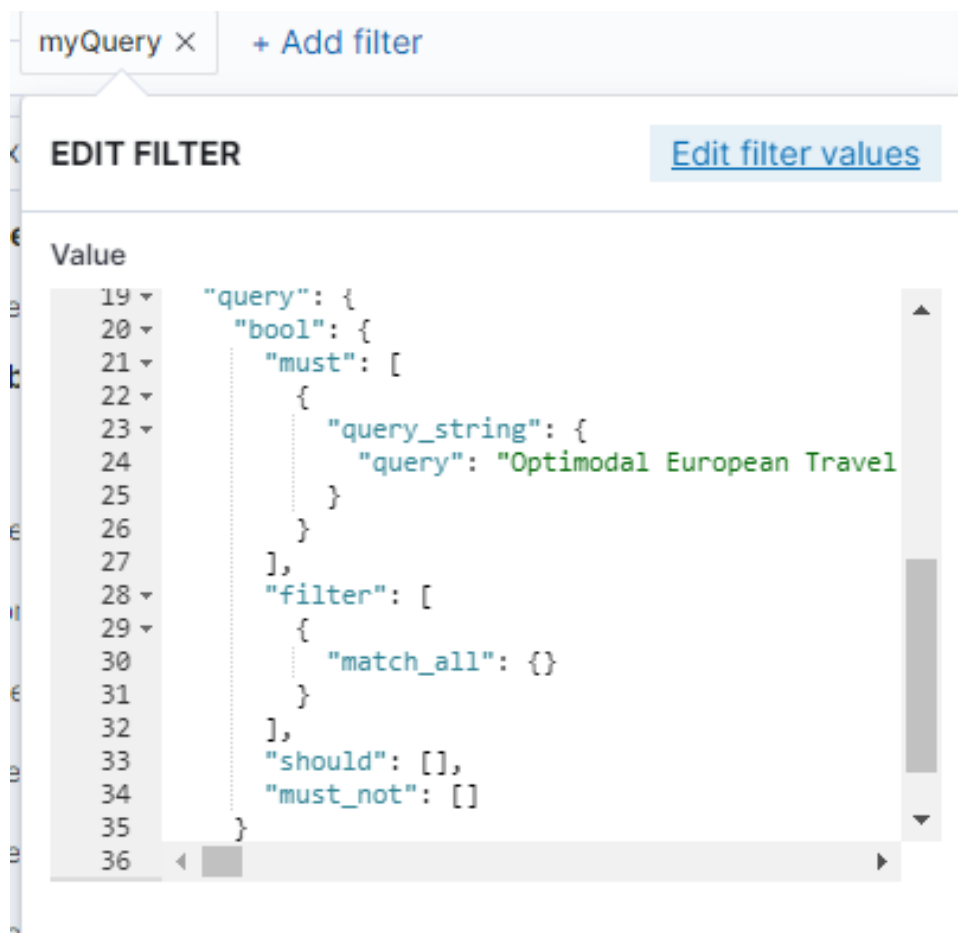
Query για ερώτημα 1:

```
1 POST index_trikalis_christos/_search
2 {
3   "query": {
4     "query_string": {
5       "query": "Optimodal European Travel Ecosystem
        EuTravel aims to:\n1. Support the EU agenda
        towards an open and single market for mobility
        services by enabling travellers to organise a
        multimodal trip in accordance with their own
        criteria including environmental performance,
        providing multimodal travel service providers
        an effective way to deliver customised services
        addressing any type of specialised travel needs
        and facilitating fact-based EU policy making
        .\n2. Promote the creation of content, open and
        linked data for travellers enriching the
        travelling experience.\n3. Support travel
        industry players join forces towards realising
        an EU shared seamless mobility strategy and
        architecture.\nEuTravel will research and
        demonstrate Inter-modal travel optimised with
        respect to synchronisation between modes,
        passenger experience and rights and
        environmental performance (Optimodal Travel).
        .\n\nThe project objectives will be realised by:
        :\n1. Developing an open and readily usable
        Optimodality Framework aimed at integrating
        processes, data, and systems in a manner that
        eliminates interoperability barriers to the
        marketplace emergence of truly Optimodal travel
        services: from planning through booking and the
        full range of related travel support solutions
        .\n2. Delivering Optimodality Ecosystem
        Enablers, offering an open infrastructure that
        allows organisations to set up cost-effective
        integration of existing systems and to create
        value added multimodal travel services.\n3.
        Organising and developing a Living Lab to
        experiment and evaluate new concepts and
        prototype solutions in real life multimodal
        travel scenarios and obtain data to quantify
        impact.\n4. Taking actions towards sustainable
        development including a Stakeholder Engagement
        Strategy and wide dissemination.\nEuTravel,
        unlike other projects initiatives, will deliver
        an Ecosystem promoting and supporting Optimodal
        travel that will have higher chances of success
        as it will be populated with tools that tap
        into existing mainstream IT travel reservation
        systems and sources of data ",
6       "analyzer": "rebuild_english"
7     }
8   },
9   "from": 1,
10  "size": 12
11 }
12
13
```

```
1 {
2   "took": 256,
3   "timed_out": false,
4   "shards": {
5     "total": 1,
6     "successful": 1,
7     "skipped": 0,
8     "failed": 0
9   },
10  "hits": {
11    "total": {
12      "value": 10000,
13      "relation": "gte"
14    },
15    "max_score": 353.03513,
16    "hits": [
17      {
18        "_index": "index_trikalis_christos",
19        "_type": "doc",
20        "_id": "204",
21        "_score": 173.98183,
22        "_source": {
23          "project": {
24            "identifien": "H2020MG2014TwoStages",
25            "xmlns": "http://cordis.europa.eu",
26            "acronym": "IT2RAIL",
27            "text": "INFORMATION TECHNOLOGIES FOR SHIFT TO RAIL | The IT²RAIL -“Information
        Technologies for Shift to rail” proposal, first step towards the long term IP4
        -“IT for an Attractive Railway” SHIFT²RAIL Innovation Programme, aims at
        providing a new seamless travel experience, giving access to a complete
        multimodal travel offer which connects the first and last mile to long distance
        journeys.This is achieved through the introduction of a ground breaking
        Technical Enabler based on two concepts:• the traveler is placed at the heart
        of innovative solutions, accessing all multimodal travel services (shopping,
        ticketing, and tracking) through its travel-companion.• An open published
        framework is providing full interoperability whilst limiting impacts on
        existing systems, without prerequisites for centralized standardization.This
        Technical Enabler will be completely settled in the context of the SHIFT²RAIL
        IP4, and IT²RAIL is proposing a reduced approach to the scale of a specified
        use case without weakening any of the key concepts of IP4, such as the usage of
        Semantic Web technologies, meta planning on distributed data, travel companion
        with a protected and secured personal wallet stored in the cloud and including
        the rights to travel.The use case will be defined as a specific instantiation
        of our open concepts, and will benefit from a completely scalable architecture
        fully instantiated in IP4.This approach is addressing all the key challenges of
        the work program, supporting a complete door-to- door intermodal travel offer
        and proposing a seamless integration of the very diverse existing and future
        services for planning, one-stop-shop ticketing, and real-time re-accommodation
        .Moreover, thanks to an Interoperability framework which insulates travel
        applications from the standards fragmentation in multimodal transport, IT²RAIL
        liberates business-model innovations in the market-place, guaranteeing the
        economic self-sustainability of these e-services in the long-term.",
28        "rcn": 193373
29      }
30    ],
31    "aggregations": {
32      "index": {
33        "_index": "index_trikalis_christos",
34        "_type": "doc",
35        "_id": "7761",
36        "_score": 172.46771,
37        "_source": {
38          "project": {
39            "identifien": "H2020BES2015",
40            "xmlns": "http://cordis.europa.eu",
41            "acronym": "iBorderCtrl",
42            "text": "Intelligent Portable Border Control System | iBorderCtrl envisages to
        enable faster thorough border control for third country nationals crossing the
        borders of EU, with technologies that adopt the future development of the
        Schengen Border Management. The project will present an optimal mixture of an
        enhanced, voluntary form of a Registered Traveller Programme and an auxiliary
        solution for the Entry/Exit System based on involving bona fide travellers.
        iBorderCtrl designs and implements a system that adopts mobility concepts and
        consists of a two-stage procedure, designed to reduce cost/time spent per
        traveller at the crossing station. It leverages software and hardware
        technologies ranging from portable readers/scanners, various emerging and novel
        subsystems for automatic controls, wireless networking for mobile controls, and
        secure backend storage and processing. The two-stage procedure includes: (A)
        the registration before the travel to gather initial personal, travel document
        and vehicle data, perform a short, automated, non-invasive interview with an
        avatar, subject to lie detection and link the traveller to any pre-existing
        authority data. Utilizing multifactor analytics and risk-based approach, the
        data registered is processed and correlated with publicly open data or external
        systems such as the SIS II. Processing will need the travellers consent as set
        in EU legislation and national law. (B) the actual control at the border that
        complements pre-registered information with results of security controls that
        are performed with a portable, wireless connected iBorderCtrl unit that can be
        used inside buses/trains or any point. Multiple technologies check validity and
        authenticity of parameters (e.g. travel documents, visa, face recognition of
        traveller using passport picture, real-time automated non-invasive lie
        detection in interview by officer, etc.). The data collected are encrypted,
        securely transferred and analysed in real time, providing an automated decision
        support system for the border control officers.",
43        "rcn": 202703
44      }
45    }
46  },
47  {
48    "index": {
49      "_index": "index_trikalis_christos",
50      "_type": "doc",
51      "_id": "9604",
52      "_score": 167.44899,
53      "_source": {
54        "project": {
55          "identifien": "H2020S2R3UCFM2015011",
56          "xmlns": "http://cordis.europa.eu",
57          "acronym": "ATTRACTIVE",
58          "text": "Advanced Travel Companion and Tracking Services | Mankind's carbon...
```

Λόγω εξοικονόμησης χώρου, παραθέτω τα αποτελέσματα από το *Discover* Tab του Kibana:

Τοποθετώ τα queries:



τα 5 πρώτα αποτελέσματα:

Q01	Q02	Q03	Q04	Q05
project.rcn	project.rcn	project.rcn	project.rcn	project.rcn
> 193,378	> 213,164	> 204,146	> 214,253	> 212,490
> 193,373	> 210,232	> 204,772	> 207,381	> 213,097
> 205,685	> 194,301	> 214,637	> 200,139	> 213,548
> 193,375	> 193,380	> 205,420	> 199,862	> 199,076
> 193,386	> 211,729	> 211,673	> 199,839	> 213,095
> 193,353	> 206,417	> 209,715	> 206,182	> 206,513
> 210,137	> 212,231	> 206,575	> 194,261	> 199,853
> 194,660	> 214,253	> 193,825	> 199,237	> 213,102
> 211,970	> 206,010	> 205,572	> 208,656	> 214,839
> 206,230	> 207,482	> 205,070	> 212,762	> 193,687
> 193,715	> 212,411	> 211,273	> 212,429	> 203,402
> 211,346	> 198,340	> 207,061	> 200,779	> 205,981
> 202,703	> 198,313	> 207,976	> 198,334	> 213,127
> 206,228	> 213,081	> 206,010	> 213,159	> 212,980
> 211,697	> 200,475	> 209,468	> 194,174	> 207,194
> 213,278	> 194,185	> 199,370	> 212,158	> 212,484
> 198,900	> 211,697	> 212,413	> 203,290	> 211,135
> 194,067	> 207,805	> 193,712	> 212,386	> 206,356
> 213,250	> 194,872	> 193,440	> 202,602	> 205,793
> 205,643	> 196,277	> 193,355	> 198,464	> 206,371

Και τα 5 επόμενα:

Q06	Q07	Q08	Q09	Q10
project.rcn	project.rcn	project.rcn	project.rcn	project.rcn
> 210,133	> 213,097	> 193,715	> 197,346	> 199,879
> 210,789	> 213,102	> 193,353	> 211,063	> 199,849
> 210,137	> 212,484	> 193,722	> 211,061	> 195,269
> 213,250	> 212,490	> 203,290	> 211,083	> 195,723
> 210,916	> 213,548	> 193,373	> 211,081	> 200,424
> 211,346	> 199,859	> 193,396	> 197,343	> 198,819
> 206,824	> 206,371	> 205,669	> 194,250	> 194,285
> 194,859	> 199,188	> 193,378	> 205,594	> 194,937
> 211,941	> 207,199	> 205,685	> 211,091	> 194,229
> 193,402	> 194,427	> 210,133	> 211,077	> 199,118
> 193,380	> 213,095	> 209,715	> 210,798	> 198,013
> 211,755	> 212,139	> 211,755	> 197,338	> 205,470
> 194,660	> 206,511	> 197,162	> 198,311	> 206,387
> 206,230	> 211,490	> 203,334	> 211,072	> 199,864
> 198,881	> 193,687	> 204,966	> 211,076	> 199,877
> 196,707	> 206,164	> 206,754	> 211,067	> 215,454
> 194,900	> 206,513	> 193,356	> 197,348	> 194,275
> 204,966	> 200,391	> 208,101	> 206,355	> 197,119
> 206,575	> 213,127	> 194,600	> 197,341	> 195,865
> 211,972	> 206,387	> 194,899	> 197,344	> 194,310

ΣΗΜΕΙΩΣΗ: τα συγκεκριμένα αποτελέσματα ήταν από το 0 έως το 20, ενώ τα σωστά θα ήταν από το 1 ως το 21. (όταν άλλαξα το max results σε 21 στο Discover του Kibana, δεν το δέχτηκε και έδειχνε ακόμα μέχρι το 20^ο αποτέλεσμα). Παρ'όλα αυτά στην κονσόλα του Kibana και αργότερα στο `trec_eval`, το πρόβλημα διορθώνεται. Τα αποτελέσματα είναι από το 2^ο μέχρι το 21^ο

6. Evaluation

```
C:\Users\jgwin\Documents>op\trac>trac_eval -q qrels.test my_results.test
the public mailing list cygwin@cygwin.com
num_ret      Q01      20
num_rel      Q01      15
num_rel_ret  Q01      13
map          Q01      0.6594
Rprec        Q01      0.7333
bpref        Q01      0.8667
recip_rank   Q01      0.5000
iprec_at_recall_0.00 Q01      0.9000
iprec_at_recall_0.10 Q01      0.9000
iprec_at_recall_0.20 Q01      0.9000
iprec_at_recall_0.30 Q01      0.9000
iprec_at_recall_0.40 Q01      0.9000
iprec_at_recall_0.50 Q01      0.9000
iprec_at_recall_0.60 Q01      0.9000
iprec_at_recall_0.70 Q01      0.7333
iprec_at_recall_0.80 Q01      0.6667
iprec_at_recall_0.90 Q01      0.0000
iprec_at_recall_1.00 Q01      0.0000
P_5          Q01      0.8000
P_10         Q01      0.9000
P_15         Q01      0.7333
P_20         Q01      0.6500
P_30         Q01      0.4333
P_100        Q01      0.1300
P_200        Q01      0.0650
P_500        Q01      0.0260
P_1000       Q01      0.0130
num_ret      Q02      20
num_rel      Q02      11
num_rel_ret  Q02      5
map          Q02      0.2655
Rprec        Q02      0.2727
bpref        Q02      0.4545
recip_rank   Q02      1.0000
iprec_at_recall_0.00 Q02      1.0000
iprec_at_recall_0.10 Q02      1.0000
iprec_at_recall_0.20 Q02      0.3125
iprec_at_recall_0.30 Q02      0.3125
iprec_at_recall_0.40 Q02      0.3125
iprec_at_recall_0.50 Q02      0.0000
iprec_at_recall_0.60 Q02      0.0000
iprec_at_recall_0.70 Q02      0.0000
iprec_at_recall_0.80 Q02      0.0000
iprec_at_recall_0.90 Q02      0.0000
iprec_at_recall_1.00 Q02      0.0000
P_5          Q02      0.4000
P_10         Q02      0.3000
P_15         Q02      0.2667
P_20         Q02      0.2500
P_30         Q02      0.1667
P_100        Q02      0.0500
P_200        Q02      0.0250
P_500        Q02      0.0100
P_1000       Q02      0.0050
num_ret      Q03      20
num_rel      Q03      13
num_rel_ret  Q03      11
map          Q03      0.6814
Rprec        Q03      0.6923
bpref        Q03      0.8462
recip_rank   Q03      1.0000
iprec_at_recall_0.00 Q03      1.0000
iprec_at_recall_0.10 Q03      1.0000
iprec_at_recall_0.20 Q03      1.0000
iprec_at_recall_0.30 Q03      0.8333
iprec_at_recall_0.40 Q03      0.7778
iprec_at_recall_0.50 Q03      0.7778
iprec_at_recall_0.60 Q03      0.7273
iprec_at_recall_0.70 Q03      0.6923
iprec_at_recall_0.80 Q03      0.6111
iprec_at_recall_0.90 Q03      0.0000
iprec_at_recall_1.00 Q03      0.0000
P_5          Q03      0.8000
P_10         Q03      0.7000
P_15         Q03      0.6667
P_20         Q03      0.5500
P_30         Q03      0.3667
```

P_100	Q02	0.0500
P_200	Q02	0.0250
P_500	Q02	0.0100
P_1000	Q02	0.0050
num_ret	Q03	20
num_rel	Q03	13
num_rel_ret	Q03	11
map	Q03	0.6814
Rprec	Q03	0.6923
bpref	Q03	0.8462
recip_rank	Q03	1.0000
iprec_at_recall_0.00	Q03	1.0000
iprec_at_recall_0.10	Q03	1.0000
iprec_at_recall_0.20	Q03	1.0000
iprec_at_recall_0.30	Q03	0.8333
iprec_at_recall_0.40	Q03	0.7778
iprec_at_recall_0.50	Q03	0.7778
iprec_at_recall_0.60	Q03	0.7273
iprec_at_recall_0.70	Q03	0.6923
iprec_at_recall_0.80	Q03	0.6111
iprec_at_recall_0.90	Q03	0.0000
iprec_at_recall_1.00	Q03	0.0000
P_5	Q03	0.8000
P_10	Q03	0.7000
P_15	Q03	0.6667
P_20	Q03	0.5500
P_30	Q03	0.3667
P_100	Q03	0.1100
P_200	Q03	0.0550
P_500	Q03	0.0220
P_1000	Q03	0.0110
num_ret	Q04	20
num_rel	Q04	13
num_rel_ret	Q04	5
map	Q04	0.2246
Rprec	Q04	0.2308
bpref	Q04	0.3846
recip_rank	Q04	1.0000
iprec_at_recall_0.00	Q04	1.0000
iprec_at_recall_0.10	Q04	1.0000
iprec_at_recall_0.20	Q04	0.3750
iprec_at_recall_0.30	Q04	0.2778
iprec_at_recall_0.40	Q04	0.0000
iprec_at_recall_0.50	Q04	0.0000
iprec_at_recall_0.60	Q04	0.0000
iprec_at_recall_0.70	Q04	0.0000
iprec_at_recall_0.80	Q04	0.0000
iprec_at_recall_0.90	Q04	0.0000
iprec_at_recall_1.00	Q04	0.0000
P_5	Q04	0.4000
P_10	Q04	0.3000
P_15	Q04	0.2667
P_20	Q04	0.2500
P_30	Q04	0.1667
P_100	Q04	0.0500
P_200	Q04	0.0250
P_500	Q04	0.0100
P_1000	Q04	0.0050
num_ret	Q05	20
num_rel	Q05	15
num_rel_ret	Q05	12
map	Q05	0.6835
Rprec	Q05	0.7333
bpref	Q05	0.8000
recip_rank	Q05	1.0000
iprec_at_recall_0.00	Q05	1.0000
iprec_at_recall_0.10	Q05	1.0000
iprec_at_recall_0.20	Q05	1.0000
iprec_at_recall_0.30	Q05	0.8889
iprec_at_recall_0.40	Q05	0.8889
iprec_at_recall_0.50	Q05	0.8889
iprec_at_recall_0.60	Q05	0.7500
iprec_at_recall_0.70	Q05	0.7333
iprec_at_recall_0.80	Q05	0.6000
iprec_at_recall_0.90	Q05	0.0000
iprec_at_recall_1.00	Q05	0.0000
P_5	Q05	0.8000
P_10	Q05	0.8000
P_15	Q05	0.7333
P_20	Q05	0.6000
P_30	Q05	0.4000
P_100	Q05	0.1200
P_200	Q05	0.0600
P_500	Q05	0.0240

P_1000	Q05	0.0120
num_ret	Q06	20
num_rel	Q06	18
num_rel_ret	Q06	15
map	Q06	0.7552
Rprec	Q06	0.7222
bpref	Q06	0.8333
recip_rank	Q06	1.0000
iprec_at_recall_0.00	Q06	1.0000
iprec_at_recall_0.10	Q06	1.0000
iprec_at_recall_0.20	Q06	1.0000
iprec_at_recall_0.30	Q06	1.0000
iprec_at_recall_0.40	Q06	1.0000
iprec_at_recall_0.50	Q06	1.0000
iprec_at_recall_0.60	Q06	0.8462
iprec_at_recall_0.70	Q06	0.7500
iprec_at_recall_0.80	Q06	0.7500
iprec_at_recall_0.90	Q06	0.0000
iprec_at_recall_1.00	Q06	0.0000
P_5	Q06	1.0000
P_10	Q06	0.9000
P_15	Q06	0.7333
P_20	Q06	0.7500
P_30	Q06	0.5000
P_100	Q06	0.1500
P_200	Q06	0.0750
P_500	Q06	0.0300
P_1000	Q06	0.0150
num_ret	Q07	20
num_rel	Q07	15
num_rel_ret	Q07	10
map	Q07	0.5164
Rprec	Q07	0.5333
bpref	Q07	0.6667
recip_rank	Q07	1.0000
iprec_at_recall_0.00	Q07	1.0000
iprec_at_recall_0.10	Q07	1.0000
iprec_at_recall_0.20	Q07	1.0000
iprec_at_recall_0.30	Q07	0.7273
iprec_at_recall_0.40	Q07	0.7273
iprec_at_recall_0.50	Q07	0.7273
iprec_at_recall_0.60	Q07	0.5263
iprec_at_recall_0.70	Q07	0.0000
iprec_at_recall_0.80	Q07	0.0000
iprec_at_recall_0.90	Q07	0.0000
iprec_at_recall_1.00	Q07	0.0000
P_5	Q07	0.8000
P_10	Q07	0.7000
P_15	Q07	0.5333
P_20	Q07	0.5000
P_30	Q07	0.3333
P_100	Q07	0.1000
P_200	Q07	0.0500
P_500	Q07	0.0200
P_1000	Q07	0.0100
num_ret	Q08	20
num_rel	Q08	13
num_rel_ret	Q08	7
map	Q08	0.3629
Rprec	Q08	0.4615
bpref	Q08	0.5385
recip_rank	Q08	1.0000
iprec_at_recall_0.00	Q08	1.0000
iprec_at_recall_0.10	Q08	0.7500
iprec_at_recall_0.20	Q08	0.7500
iprec_at_recall_0.30	Q08	0.6667
iprec_at_recall_0.40	Q08	0.6667
iprec_at_recall_0.50	Q08	0.4375
iprec_at_recall_0.60	Q08	0.0000
iprec_at_recall_0.70	Q08	0.0000
iprec_at_recall_0.80	Q08	0.0000
iprec_at_recall_0.90	Q08	0.0000
iprec_at_recall_1.00	Q08	0.0000
P_5	Q08	0.6000
P_10	Q08	0.6000
P_15	Q08	0.4000
P_20	Q08	0.3500
P_30	Q08	0.2333
P_100	Q08	0.0700
P_200	Q08	0.0350
P_500	Q08	0.0140
P_1000	Q08	0.0070
num_ret	Q09	20
num_rel	Q09	20

num_rel_ret	Q09	14
map	Q09	0.6552
Rprec	Q09	0.7000
bpref	Q09	0.7000
recip_rank	Q09	1.0000
iprec_at_recall_0.00	Q09	1.0000
iprec_at_recall_0.10	Q09	1.0000
iprec_at_recall_0.20	Q09	1.0000
iprec_at_recall_0.30	Q09	1.0000
iprec_at_recall_0.40	Q09	1.0000
iprec_at_recall_0.50	Q09	0.8667
iprec_at_recall_0.60	Q09	0.8667
iprec_at_recall_0.70	Q09	0.7000
iprec_at_recall_0.80	Q09	0.0000
iprec_at_recall_0.90	Q09	0.0000
iprec_at_recall_1.00	Q09	0.0000
P_5	Q09	1.0000
P_10	Q09	0.9000
P_15	Q09	0.8667
P_20	Q09	0.7000
P_30	Q09	0.4667
P_100	Q09	0.1400
P_200	Q09	0.0700
P_500	Q09	0.0280
P_1000	Q09	0.0140
runid	all	STANDARD
num_q	all	9
num_ret	all	180
num_rel	all	133
num_rel_ret	all	92
map	all	0.5338
gm_map	all	0.4923
Rprec	all	0.5644
bpref	all	0.6767
recip_rank	all	0.9444
iprec_at_recall_0.00	all	0.9889
iprec_at_recall_0.10	all	0.9611
iprec_at_recall_0.20	all	0.8153
iprec_at_recall_0.30	all	0.7340
iprec_at_recall_0.40	all	0.6970
iprec_at_recall_0.50	all	0.6220
iprec_at_recall_0.60	all	0.5129
iprec_at_recall_0.70	all	0.4010
iprec_at_recall_0.80	all	0.2920
iprec_at_recall_0.90	all	0.0000
iprec_at_recall_1.00	all	0.0000
P_5	all	0.7333
P_10	all	0.6778
P_15	all	0.5778
P_20	all	0.5111
P_30	all	0.3407
P_100	all	0.1022
P_200	all	0.0511
P_500	all	0.0204
P_1000	all	0.0102

MAP

```
C:\> cd C:\Program Files\TREC\src\map
C:\Program Files\TREC\src\map> trec_eval -m map qrels.test my_results.test
map          all      0.5338
```