

DATABASE MANAGEMENT SYSTEMS



Team 7

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A leading consulting firm specializing in university rankings.

Core Service:

Assisting universities in enhancing their rankings by analyzing real-time data and trends in the educational landscape.

PROJECT MISSION

- ❑ Aims to empower UMD Smith School stakeholders with detailed, accurate ranking data.
- ❑ Develops a state-of-the-art database integrating diverse data over multiple years.
- ❑ Utilizes comprehensive ranking data to provide valuable insights for UMD stakeholders.
- ❑ Examining how data sources weigh and evaluate programs, focusing on specific criteria.
- ❑ Analyzing top competitors to strategize Smith School's improved market standing.

BACKGROUND ANALYSIS

Users



- ☐ Current Students
- ☐ Prospective Student
- ☐ Parents
- ☐ Academic Advisor
- ☐ Professors

Ranking Sources



- ☐ QS World University
- ☐ The Financial Times
- ☐ U.S. News
- ☐ Poets & Quants
- ☐ Fortune
- ☐ Edvoy

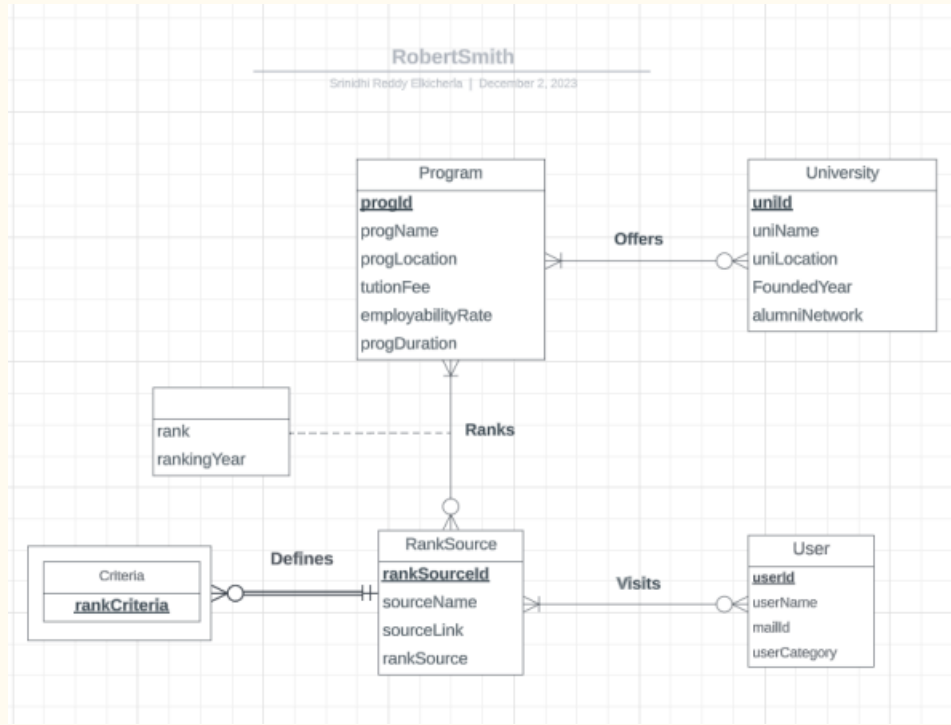
Ranking Criteria



- ☐ Reputation and Quality
- ☐ Student and Faculty Metrics
- ☐ Career and Alumni Outcomes
- ☐ Educational & Financial Factors
- ☐ Institutional Recognition

CONCEPTUAL DATABASE DESIGN

Entity Relationship Diagram



LOGICAL DATABASE DESIGN

Relational Schema

University(uniId, uniName, uniLocation, foundedYear, alumniNetwork)

Program(progId, progName, progLocation, tuitionFee, progDuration, employabilityRate)

RankSource(rankSrcId, rankSrcName, rankSrcLink, rankingCriteria)

Criteria(rankCriteria, *rankSrcId*)

User(userId, userName, userEmailId, userCategory)

Ranks(*progId*, *rankSrcId*, rankYear, rank)

Offers(*progId*, *uniId*)

Visits(*rankSrcId*, *userId*)

PHYSICAL DATABASE DESIGN

```
CREATE TABLE [UniRank.Program](  
    progId CHAR (4) NOT NULL,  
    uniId CHAR(4) NOT NULL,  
    progName VARCHAR (60),  
    progLocation VARCHAR (60),  
    progTuitionFee DECIMAL,  
    progDuration DECIMAL,  
    progEmployabilityRate DECIMAL,  
    CONSTRAINT pk_Program_progId PRIMARY KEY (progId),  
    CONSTRAINT fk_Program_uniId FOREIGN KEY (uniId)  
    REFERENCES [UniRank.University] (uniId)  
    ON DELETE CASCADE ON UPDATE NO ACTION);
```



What is the ranking trend for Information Systems and Business Analytics for UMD over past 3 years? Are they improving or declining?

```
Go
DROP VIEW IF EXISTS [UniRank.ViewISBAUMDRank]
Go
]CREATE VIEW [UniRank.ViewISBAUMDRank] AS
SELECT p.progName,
       r.rankNumber,
       r.rankYear,
       rs.rankSrcName
FROM [UniRank.Program] p
     INNER JOIN [UniRank.University] u ON p.uniId = u.uniId
     INNER JOIN [UniRank.Ranks] r ON p.progId = r.progId
     INNER JOIN [UniRank.RankSource] rs ON rs.rankSrcId = r.rankSrcId
WHERE p.progName IN ('Information Systems','Business Analytics') and u.uniId='UN01'
GO

]SELECT * FROM [UniRank.ViewISBAUMDRank]
ORDER BY progName,rankYear DESC
```


OUTPUT

Results		Messages		
	progName	rankNumber	rankYear	rankSrcName
1	Business Analytics	38	2023	QS World University
2	Business Analytics	31	2022	QS World University
3	Business Analytics	25	2021	QS World University
4	Business Analytics	NULL	2020	QS World University
5	Information Systems	11	2023	U.S. News & World Report
6	Information Systems	8	2023	Edvoy
7	Information Systems	17	2022	Edvoy
8	Information Systems	8	2022	U.S. News & World Report
9	Information Systems	10	2021	U.S. News & World Report
10	Information Systems	9	2020	U.S. News & World Report

Who are the top-ranking competitors for UMD Smith School in MBA?

```
Go
DROP VIEW IF EXISTS [UniRank.TopCompetitorsMBA]
Go
CREATE VIEW [UniRank.TopCompetitorsMBA] AS
SELECT P.progName,
       U.uniName,
       R.rankNumber,
       R.rankSrcId
FROM [UniRank.Program] P
     INNER JOIN [UniRank.University] U ON P.uniId = U.uniId
     INNER JOIN [UniRank.Ranks] R ON P.progId = R.progId
WHERE P.progName = 'MBA' and R.rankYear=2023 and
      R.rankNumber < (SELECT ranks.rankNumber
                      FROM [UniRank.Ranks] ranks
                      WHERE ranks.progId='PR05' and ranks.rankYear=2023)
GROUP BY P.progName,U.uniName,R.rankNumber, R.rankSrcId
Go

SELECT DISTINCT tc.uniName, tc.rankNumber, rs.rankSrcName
FROM [UniRank.TopCompetitorsMBA] tc
     INNER JOIN [UniRank.RankSource] rs ON rs.rankSrcId = tc.rankSrcId
ORDER BY tc.rankNumber ASC
```

OUTPUT

Results		Messages	
	uniName	rankNumber	rankSrcName
1	Harvard University	1	Fortune
2	Stanford University	1	QS World University
3	The University of Pennsylvania (Wharton School)	1	Poets&Quants
4	Harvard University	2	QS World University
5	Stanford University	2	Fortune
6	University of Chicago	2	Poets&Quants
7	University of Texas at Austin	2	Fortune
8	Stanford University	3	Poets&Quants
9	The University of Pennsylvania (Wharton School)	3	Fortune
10	Northwestern University (Kellogg School of Manage...	4	Poets&Quants
11	Harvard University	5	Poets&Quants
12	Northwestern University (Kellogg School of Manage...	5	Fortune



Thank you