

# HW7 CS432

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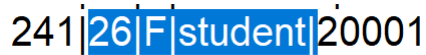
## Q1

To find the users closest to me in age, gender, and occupation, I searched the user file using 'ctrl+F' for the string '26|F|student' and found users 241 and 939. Then I searched for '25|F|student' and found user 203. See those results pictured below in Figure 1, 2, and 3.



203|25|F|student|32301

Figure 1: User 203 From u.user.txt



241|26|F|student|20001

Figure 2: User 241 From u.user.txt



939|26|F|student|33319

Figure 3: User 939 From u.user.txt

Below are the results of their favorite and least favorite movies. First, you see the table with the top and bottom three for each user. Then, you can see all the ratings for each user. I had to examine further than the top and bottom three for each user, because a lot of the movies I had not seen. That will be a running theme throughout this project. Generation gaps are tough. I chose user 939 pretty much at random out of the three users.

```

C:\Users\Ondra Torkilson\Documents\CS432\HW7>python3 recommender.py
-----
203 Favorites      Emma, Swingers, Scream
203 Least Favorites A Time to Kill, Fargo, Liar, Liar
241 Favorites      The English Patient, Scream, Soul Food
241 Least Favorites Seven Years in Tibet, Fallen, Alien: Resurrection
939 Favorites      Courage Under Fire, Jerry Maguire, People vs. Larry Flynt
939 Least Favorites The Island of Dr. Moreau, Mortal Kombat: Annihilation, Kull the Conqueror
-----

```

Figure 4: Top and Bottom Three For Each User

```

C:\Users\Ondra Torkilson\Documents\CS432\HW7>python3 recommender.py
This is user 203
[('Time to Kill, A (1996)', 1.0),
 ('Fargo (1996)', 1.0),
 ('Liar Liar (1997)', 2.0),
 ('House Arrest (1996)', 2.0),
 ('Mortal Kombat: Annihilation (1997)', 2.0),
 ('Saint, The (1997)', 2.0),
 ('Michael Collins (1996)', 2.0),
 ('Mother (1996)', 3.0),
 ('Ghost and the Darkness, The (1996)', 3.0),
 ('Playing God (1997)', 3.0),
 ('Starship Troopers (1997)', 3.0),
 ('Toy Story (1995)', 3.0),
 ('Extreme Measures (1996)', 3.0),
 ('Twelve Monkeys (1995)', 3.0),
 ('Fly Away Home (1996)', 3.0),
 ('Trainspotting (1996)', 3.0),
 ('Hercules (1997)', 3.0),
 ('Men in Black (1997)', 3.0),
 ('Contact (1997)', 3.0),
 ('Dante's Peak (1997)', 3.0),
 ('Ransom (1996)', 3.0),
 ('Jerry Maguire (1996)', 3.0),
 ('Nixon (1995)', 3.0),
 ('Courage Under Fire (1996)', 4.0),
 ('Welcome to the Dollhouse (1995)', 4.0),
 ('Rock, The (1996)', 4.0),
 ('G.I. Jane (1997)', 4.0),
 ('Rumble in the Bronx (1995)', 4.0),
 ('Willy Wonka and the Chocolate Factory (1971)', 4.0),
 ('Fifth Element, The (1997)', 4.0),
 ('One Fine Day (1996)', 4.0),
 ('Leaving Las Vegas (1995)', 4.0),
 ('Star Trek: First Contact (1996)', 4.0),
 ('Peacemaker, The (1997)', 4.0),
 ('Matilda (1996)', 4.0),
 ('Sleepers (1996)', 4.0),
 ('Return of the Jedi (1983)', 5.0),
 ('Kiss the Girls (1997)', 5.0),
 ('Star Wars (1977)', 5.0),
 ('Grosse Pointe Blank (1997)', 5.0),
 ('Scream (1996)', 5.0),
 ('Swingers (1996)', 5.0),
 ('Emma (1996)', 5.0)]

```

Figure 5: User 203 Preferences

```

This is user 241
[('Seven Years in Tibet (1997)', 2.0),
 ('Fallen (1998)', 2.0),
 ('Alien: Resurrection (1997)', 2.0),
 ('I Know What You Did Last Summer (1997)', 2.0),
 ('Scream 2 (1997)', 2.0),
 ('Liar Liar (1997)', 3.0),
 ('Kiss the Girls (1997)', 3.0),
 ('L.A. Confidential (1997)', 3.0),
 ('How to Be a Player (1997)', 3.0),
 ('Jackie Brown (1997)', 3.0),
 ('Jackal, The (1997)', 3.0),
 ('Gattaca (1997)', 3.0),
 ('Devil's Advocate, The (1997)', 4.0),
 ('Rosewood (1997)', 4.0),
 ('Titanic (1997)', 4.0),
 ('Eve's Bayou (1997)', 4.0),
 ('Rainmaker, The (1997)', 4.0),
 ('Chasing Amy (1997)', 4.0),
 ('Air Force One (1997)', 4.0),
 ('Amistad (1997)', 5.0),
 ('Soul Food (1997)', 5.0),
 ('Scream (1996)', 5.0),
 ('English Patient, The (1996)', 5.0)]
This is user 939
[('Island of Dr. Moreau, The (1996)', 2.0),
 ('Mortal Kombat: Annihilation (1997)', 2.0),
 ('Kull the Conqueror (1997)', 2.0),
 ('Diabolique (1996)', 3.0),
 ('Girl 6 (1996)', 3.0),
 ('Preacher's Wife, The (1996)', 3.0),
 ('Children of the Corn: The Gathering (1996)', 3.0),
 ('Batman & Robin (1997)', 3.0),
 ('Lost World: Jurassic Park, The (1997)', 3.0),
 ('Contact (1997)', 4.0),
 ('Mr. Wrong (1996)', 4.0),
 ('Jack (1996)', 4.0),
 ('Hercules (1997)', 4.0),
 ('Fathers' Day (1997)', 4.0),
 ('Eraser (1996)', 4.0),
 ('Nutty Professor, The (1996)', 4.0),
 ('Juror, The (1996)', 4.0),
 ('Glimmer Man, The (1996)', 4.0),
 ('Mission: Impossible (1996)', 4.0),
 ('Broken Arrow (1996)', 4.0),
 ('Sense and Sensibility (1995)', 4.0),
 ('Jackal, The (1997)', 5.0),
 ('First Wives Club, The (1996)', 5.0),
 ('Independence Day (ID4) (1996)', 5.0),
 ('That Old Feeling (1997)', 5.0),
 ('Star Trek: First Contact (1996)', 5.0),
 ('G.I. Jane (1997)', 5.0),
 ('Associate, The (1996)', 5.0),
 ('Set It Off (1996)', 5.0),
 ('Mirror Has Two Faces, The (1996)', 5.0),
 ('Godfather, The (1972)', 5.0),
 ('Twister (1996)', 5.0),
 ('Face/Off (1997)', 5.0),

```

Figure 6: User 241 and 939 Preferences

## Q2

For questions 2, 3, and 4, I directly edited the 'recommender.py' script. To find the correlations of the other users to substitute me for Q2, I used the built-in function 'sim\_pearson' within a for loop to calculate the correlation of each user in the preferences dictionary to user 939. Then, I sorted the list of correlations and examined the top and bottom of the list.

```
#q2
correlationsToMe = []
for i in prefs:
    correlation = sim_pearson(prefs, '939', i)
    userAndCorrelation = {'i':i, 'correlation':correlation}
    correlationsToMe.append(userAndCorrelation)

sorted_correlations = sorted(correlationsToMe, key = lambda item: item['correlation'])
pprint.pprint(sorted_correlations)
#q2
```

```
{'correlation': 1.0, 'i': '801'},
{'correlation': 1.0, 'i': '826'},
{'correlation': 1.0, 'i': '816'},
{'correlation': 1.0, 'i': '846'},
{'correlation': 1.0, 'i': '873'},
{'correlation': 1.0, 'i': '939'},
{'correlation': 1.0000000000000004, 'i': '603'}
```

Figure 7: Positively Correlated Users to 939

```
[{'correlation': -1.0, 'i': '154'},
{'correlation': -1.0, 'i': '111'},
{'correlation': -1.0, 'i': '281'},
{'correlation': -1.0, 'i': '118'},
{'correlation': -1.0, 'i': '171'},
{'correlation': -1.0, 'i': '153'},
```

Figure 8: Negatively Correlated Users to 939

## Q3

For question 3, I used the built-in function `getRecommendations` on the user 939. Then, I was able to see the top and bottom recommended movies from the returned list which I called 'recommendations.' You can see these pictured below, and I included the top and bottom 10.

```
#q3
prefs = loadMovieLens()
recommendations = getRecommendations(prefs, '939', sim_pearson)
pprint.pprint(recommendations)
#q3
```

```

C:\Users\Ondra Torkilsson\Documents\CS432\HW7>python3 recommender.py
[(5.0, 'Two or Three Things I Know About Her (1966)'),
 (5.0, 'They Made Me a Criminal (1939)'),
 (5.0, 'Santa with Muscles (1996)'),
 (5.0, 'Saint of Fort Washington, The (1993)'),
 (5.0, 'Prefontaine (1997)'),
 (5.0, 'Marlene Dietrich: Shadow and Light (1996) '),
 (5.0, 'Little City (1998)'),
 (5.0, 'Horse Whisperer, The (1998)'),
 (5.0, 'Great Day in Harlem, A (1994)'),
 (5.0, 'Aparajito (1956)'),
 (5.0, 'Aiqing wansui (1994)'),

```

Figure 9: Top Ten Recommendations For Substitute Me, User 939

```

(1.0, 'Venice/Venice (1992)'),
(1.0, 'Turbo: A Power Rangers Movie (1997)'),
(1.0, 'Tough and Deadly (1995)'),
(1.0, 'Time Tracers (1995)'),
(1.0, 'The Deadly Cure (1996)'),
(1.0, 'Stefano Quantestorie (1993)'),
(1.0, 'Somebody to Love (1994)'),
(1.0, 'Shadow of Angels (Schatten der Engel) (1976)'),
(1.0, 'Relative Fear (1994)'),
(1.0, 'Power 98 (1995)'),
(1.0, 'Police Story 4: Project S (Chao ji ji hua) (1993)'),
(1.0, 'Open Season (1996)'),
(1.0, 'New York Cop (1996)'),
(1.0, 'New Age, The (1994)'),
(1.0,
 "My Life and Times With Antonin Artaud (En compagnie d'Antonin Artaud) "
 '(1993)'),
(1.0, 'Mr. Magoo (1997)'),
(1.0, 'Mille bolle blu (1993)'),
(1.0, 'Mighty, The (1998)'),
(1.0, 'Low Life, The (1994)'),
(1.0, 'Lotto Land (1995)'),
(1.0, 'Loch Ness (1995)'),
(1.0, 'Leopard Son, The (1996)'),
(1.0, 'JLG/JLG - autoportrait de décembre (1994)'),
(1.0, 'Hugo Pool (1997)'),
(1.0, 'Homage (1995)'),
(1.0, 'Hedd Wyn (1992)'),
(1.0, 'Gordy (1995)'),
(1.0, 'Good Morning (1971)'),
(1.0, "Gilligan's Island: The Movie (1998)"),
(1.0, 'Getting Away With Murder (1996)'),
(1.0, 'Falling in Love Again (1980)'),
(1.0, 'Every Other Weekend (1990)'),
(1.0, 'Crude Oasis, The (1995)'),
(1.0, 'Country Life (1994)'),
(1.0, 'Castle Freak (1995)'),
(1.0, 'Butterfly Kiss (1995)'),
(1.0, 'Boys in Venice (1996)'),
(1.0, 'Bloody Child, The (1996)'),
(1.0, 'Bird of Prey (1996)'),
(1.0, 'Beyond Bedlam (1993)'),
(1.0, 'Ballad of Narayama, The (Narayama Bushiko) (1958)'),
(1.0, 'Ayn Rand: A Sense of Life (1997)'),
(1.0, 'August (1996)'),
(1.0, 'Amityville: Dollhouse (1996)'),
(1.0, 'Amityville: A New Generation (1993)'),
(1.0, 'Amityville Curse, The (1990)'),
(1.0, 'Amityville 3-D (1983)'),
(1.0, "Amityville 1992: It's About Time (1992)"),
(1.0, '3 Ninjas: High Noon At Mega Mountain (1998)')]

```

Figure 10: Bottom Ten Recommendations For Substitute Me, User 939

## Q4

It was slightly difficult to choose a least favorite and favorite film from a list of 1682 films, most of which I had never seen before. Luckily, I found Groundhog Day, which is definitely one of my favorites. As for the least favorite, I chose one of the lowest rated films from substitute me, 'Mortal Kombat: Annihilation'. Figures 11, 12, 13, and 14 show the highest and lowest correlated movies to 'Groundhog Day' and the highest and lowest correlated movies to 'Mortal Kombat: Annihilation'.

Based on the correlations, I agree with some of them and not others. For example, none of the movies correlated with Groundhog Day seemed interesting to me. I had to watch trailers, because I had not seen any of them.

**Infinity** did not seem like a movie I would like, even though I really enjoy Patricia Arquette.

**Bliss** was a German movie, subtitled in English about some woman in her midlife crisis cheating on her husband with an author. Not my style.

Some of the other top correlations with Groundhog Day were foreign films with no translated trailers, such as **Nelly & Monsuier Arnaud**, **Le Colonel Chabert**, and **La Flor De Mi Secreto**.

```
{'correlation': 1.0, 'i': 'Groundhog Day (1993)'},
{'correlation': 1.0, 'i': 'Colonel Chabert, Le (1994)'},
{'correlation': 1.0, 'i': 'Perfect Candidate, A (1996)'},
{'correlation': 1.0, 'i': 'Outlaw, The (1943)'},
{'correlation': 1.0,
 'i': 'Flower of My Secret, The (Flor de mi secreto, La) (1995)'},
{'correlation': 1.0, 'i': 'Murder, My Sweet (1944)'},
{'correlation': 1.0, 'i': 'Nelly & Monsiur Arnaud (1995)'},
{'correlation': 1.0, 'i': 'Second Jungle Book: Mowgli & Baloo, The (1997)'},
{'correlation': 1.0, 'i': 'Pompatus of Love, The (1996)'},
{'correlation': 1.0, 'i': 'Gabbah (1996)'},
{'correlation': 1.0, 'i': 'Wonderland (1997)'},
{'correlation': 1.0, 'i': 'Infinity (1996)'},
{'correlation': 1.0, 'i': 'Bliss (1997)'},
{'correlation': 1.0, 'i': 'Wild Reeds (1994)'},
{'correlation': 1.0, 'i': 'Ed's Next Move (1996)'},
{'correlation': 1.0, 'i': 'Across the Sea of Time (1995)'},
{'correlation': 1.0, 'i': 'Two or Three Things I Know About Her (1966)'},
{'correlation': 1.0, 'i': 'Boys Life (1995)'},
{'correlation': 1.0, 'i': 'Savage Nights (Nuits fauves, Les) (1992)'},
{'correlation': 1.0, 'i': 'Paradise Road (1997)'},
{'correlation': 1.0, 'i': 'Mr. Jones (1993)'},
{'correlation': 1.0, 'i': 'Wedding Gift, The (1994)'},
{'correlation': 1.0, 'i': 'New Jersey Drive (1995)'},
{'correlation': 1.0, 'i': 'Safe Passage (1994)'},
{'correlation': 1.0, 'i': 'Romper Stomper (1992)'},
{'correlation': 1.0, 'i': 'Guantanamo (1994)'},
{'correlation': 1.0, 'i': 'Lamerica (1994)'}
```

Figure 11: Positive Correlation: Groundhog Day

Some of the films negatively associated with 'Groundhog Day', I think I would have liked such as 'I Like It Like That', 'The Scarlet Letter,' and 'The Joy Luck Club.' The first was a comedic drama based on the life of a strong-willed mother in the Bronx. The second two are based off of books that I read and enjoyed, although this does not mean they would be good movies.

I do agree that I probably would not like 'Bad Moon.' though, which seemed to be a werewolf thriller.

```
'Correlations to "Groundhog Day (1993)"'
[{'correlation': -1.0000000000000007, 'i': 'Dingo (1992)'},
 {'correlation': -1.0000000000000007, 'i': 'I Like It Like That (1994)'},
 {'correlation': -1.0, 'i': 'C'est arrivé près de chez vous (1992)'},
 {'correlation': -1.0, 'i': 'Scarlet Letter, The (1995)'},
 {'correlation': -1.0, 'i': 'Bad Moon (1996)'},
 {'correlation': -1.0, 'i': 'Talking About Sex (1994)'},
 {'correlation': -1.0, 'i': 'Search for One-eye Jimmy, The (1996)'},
 {'correlation': -1.0, 'i': 'Broken English (1996)'},
 {'correlation': -1.0, 'i': 'Neon Bible, The (1995)'},
 {'correlation': -1.0, 'i': 'The Innocent (1994)'},
 {'correlation': -1.0, 'i': 'Love and Death on Long Island (1997)'},
 {'correlation': -1.0, 'i': 'Nil By Mouth (1997)'},
 {'correlation': -1.0, 'i': 'Vermin (1998)'},
 {'correlation': -1.0, 'i': 'Caro Diario (Dear Diary) (1994)'},
 {'correlation': -1.0, 'i': 'Palmetto (1998)'},
 {'correlation': -1.0, 'i': 'Pushing Hands (1992)'},
 {'correlation': -1.0, 'i': 'Joy Luck Club, The (1993)'},
 {'correlation': -1.0, 'i': 'Four Days in September (1997)'},
 {'correlation': -1.0, 'i': 'Enfer, L' (1994)'},
 {'correlation': -1.0, 'i': 'Collectionneuse, La (1967)'},
 {'correlation': -1.0, 'i': 'Schizopolis (1996)'},
 {'correlation': -1.0, 'i': 'Show, The (1995)'},
 {'correlation': -1.0, 'i': 'Dream Man (1995)'},
 {'correlation': -1.0, 'i': 'Aparajito (1956)'},
 {'correlation': -1.0, 'i': 'American Dream (1990)'},
 {'correlation': -1.0, 'i': 'Clean Slate (Coup de Torchon) (1981)'},
 {'correlation': -1.0, 'i': 'Glass Shield, The (1994)'},
 {'correlation': -1.0, 'i': 'Condition Red (1995)'},
 {'correlation': -1.0, 'i': 'It Takes Two (1995)'},
 {'correlation': -1.0, 'i': 'Slingshot, The (1993)'},
 {'correlation': -1.0, 'i': 'Angel Baby (1995)'}
```

Figure 12: Negative Correlation: Groundhog Day



The films positively and negatively correlated with my least favorite movie seemed more accurate.

Positive associations with 'Mortal Kombat: Annihilation' all seemed pretty bad **My Own Private Idaho** had a really bizzare trailer, and I do not think I would have liked that movie. Same goes for **Trigger Effect**, **Jeffrey**, and **The Last Supper**.

Films negatively associated with 'Mortal Kombat: Annihilation' such as 'Little Women,' 'Les Miserables,' and 'Anne Frank Remembered' all seemed interesting, as I love period pieces and Holocaust remembrance pieces. Also, 'The Truman Show' was good.

```
{'correlation': 1.0, 'i': 'Stuart Saves His Family (1995)'},
{'correlation': 1.0, 'i': 'My Own Private Idaho (1991)'},
{'correlation': 1.0, 'i': 'Young Guns II (1990)'},
{'correlation': 1.0, 'i': 'Now and Then (1995)'},
{'correlation': 1.0, 'i': 'Last Supper, The (1995)'},
{'correlation': 1.0, 'i': 'Jeffrey (1995)'},
{'correlation': 1.0, 'i': 'Mortal Kombat: Annihilation (1997)'},
{'correlation': 1.0, 'i': 'Romeo Is Bleeding (1993)'},
{'correlation': 1.0, 'i': 'Judgment Night (1993)'},
{'correlation': 1.0, 'i': 'Trigger Effect, The (1996)'},
{'correlation': 1.0, 'i': 'Mute Witness (1994)'},
{'correlation': 1.0, 'i': 'Village of the Damned (1995)'},
{'correlation': 1.0, 'i': 'National Lampoon's Senior Trip (1995)'},
{'correlation': 1.0, 'i': 'Charade (1963)'},
{'correlation': 1.0, 'i': 'Paris Is Burning (1990)'},
{'correlation': 1.0,
 'i': 'Until the End of the World (Bis ans Ende der Welt) (1991)'},
{'correlation': 1.0, 'i': 'Beverly Hillbillies, The (1993)'},
{'correlation': 1.0, 'i': 'Children of the Corn: The Gathering (1996)'},
{'correlation': 1.0, 'i': 'Jury Duty (1995)'},
{'correlation': 1.0, 'i': 'Jane Eyre (1996)'},
{'correlation': 1.0, 'i': 'Bloodsport 2 (1995)'},
{'correlation': 1.0, 'i': 'Wonderland (1997)'},
{'correlation': 1.0, 'i': 'Addiction, The (1995)'},
{'correlation': 1.0, 'i': 'Sunset Park (1996)'},
{'correlation': 1.0, 'i': 'Mary Reilly (1996)'},
{'correlation': 1.0, 'i': 'Poetic Justice (1993)'},
{'correlation': 1.0, 'i': 'Night Flier (1997)'},
{'correlation': 1.0, 'i': 'Double Happiness (1994)'},
{'correlation': 1.0, 'i': 'That Old Feeling (1997)'},
{'correlation': 1.0, 'i': 'April Fool's Day (1986)'},
{'correlation': 1.0, 'i': 'Time Tracers (1995)'},
{'correlation': 1.0, 'i': 'Frisk (1995)'},
{'correlation': 1.0, 'i': 'Tom and Huck (1995)'},
{'correlation': 1.0, 'i': 'Head Above Water (1996)'},
{'correlation': 1.0, 'i': 'North (1994)'},
{'correlation': 1.0, 'i': 'Bushwhacked (1995)'},
{'correlation': 1.0, 'i': 'Killer (Bulletproof Heart) (1994)'},
{'correlation': 1.0, 'i': 'Stalker (1979)'},
{'correlation': 1.0000000000000007, 'i': 'Angus (1995)'},
{'correlation': 1.0000000000000001,
 'i': 'Return of Martin Guerre, The (Retour de Martin Guerre, Le) (1982)'},
{'correlation': 1.0000000000000022, 'i': 'Showgirls (1995)'}
```

Figure 13: Positive Correlation: Mortal Kombat: Annihilation

```

Correlations to "Mortal Kombat: Annihilation (1997)"
[{'correlation': -1.0000000000000001, 'i': 'To Catch a Thief (1955)'},
{'correlation': -1.0000000000000007, 'i': 'Chamber, The (1996)'},
{'correlation': -1.0000000000000007, 'i': 'Apple Dumpling Gang, The (1975)'},
{'correlation': -1.0, 'i': 'Englishman Who Went Up a Hill, But Came Down a Mountain, The (1995)'},
{'correlation': -1.0, 'i': 'Rich Man's Wife, The (1996)'},
{'correlation': -1.0, 'i': 'Set It Off (1996)'},
{'correlation': -1.0, 'i': 'Boys on the Side (1995)'},
{'correlation': -1.0, 'i': 'Night on Earth (1991)'},
{'correlation': -1.0, 'i': 'Bottle Rocket (1996)'},
{'correlation': -1.0, 'i': 'Misérables, Les (1995)'},
{'correlation': -1.0, 'i': 'Little Women (1994)'},
{'correlation': -1.0, 'i': 'Safe (1995)'},
{'correlation': -1.0, 'i': 'Priest (1994)'},
{'correlation': -1.0, 'i': 'Gang Related (1997)'},
{'correlation': -1.0, 'i': 'Telling Lies in America (1997)'},
{'correlation': -1.0, 'i': 'Made in America (1993)'},
{'correlation': -1.0, 'i': 'Bogus (1996)'},
{'correlation': -1.0, 'i': 'M. Butterfly (1993)'},
{'correlation': -1.0, 'i': 'Vampire in Brooklyn (1995)'},
{'correlation': -1.0, 'i': 'Cemetery Man (Dellamorte Dellamore) (1994)'},
{'correlation': -1.0, 'i': 'Specialist, The (1994)'},
{'correlation': -1.0, 'i': 'Two if by Sea (1996)'},
{'correlation': -1.0, 'i': 'Milk Money (1994)'},
{'correlation': -1.0, 'i': 'Jade (1995)'},
{'correlation': -1.0, 'i': 'Bad Company (1995)'},
{'correlation': -1.0, 'i': 'Bride of Frankenstein (1935)'},
{'correlation': -1.0, 'i': 'Old Man and the Sea, The (1958)'},
{'correlation': -1.0, 'i': 'Umbrellas of Cherbourg, The (Parapluies de Cherbourg, Les) (1964)'},
{'correlation': -1.0, 'i': 'Secret Agent, The (1996)'},
{'correlation': -1.0, 'i': 'Beautiful Thing (1996)'},
{'correlation': -1.0, 'i': 'Primary Colors (1998)'},
{'correlation': -1.0, 'i': 'NeverEnding Story III, The (1994)'},
{'correlation': -1.0, 'i': 'Anne Frank Remembered (1995)'},
{'correlation': -1.0, 'i': 'Heaven's Prisoners (1996)'},
{'correlation': -1.0, 'i': 'House of Yes, The (1997)'},
{'correlation': -1.0, 'i': 'Old Lady Who Walked in the Sea, The (Vieille qui marchait dans la mer, '
'La) (1991)'},
{'correlation': -1.0, 'i': 'Heaven & Earth (1993)'},
{'correlation': -1.0, 'i': 'Something to Talk About (1995)'},
{'correlation': -1.0, 'i': 'Man of the House (1995)'},
{'correlation': -1.0, 'i': 'Above the Rim (1994)'},
{'correlation': -1.0, 'i': 'Bread and Chocolate (Pane e cioccolata) (1973)'},
{'correlation': -1.0, 'i': 'Truman Show, The (1998)'},
{'correlation': -1.0, 'i': 'Beans of Egypt, Maine, The (1994)'},

```

Figure 14: Negative Correlation: Mortal Kombat: Annihilation

In order to get correlations on the movies, I used the built-in function `transformPrefs` which took the dictionary of users and their ratings and transformed that into a dictionary of movies with user ratings. Then, I just iterated through that dictionary and ran the `sim_pearson` function on each movie plus my favorite and least favorite movie, sorted those lists, and examined the top and bottom of those lists.

```
#q4
transformPrefs = transformPrefs(prefs)
correlationsToMovie = []
for i in transformPrefs:
    correlation = sim_pearson(transformPrefs, 'Mortal Kombat: Annihilation (1997)', i)
    movieAndCorrelation = {'i':i, 'correlation':correlation}
    correlationsToMovie.append(movieAndCorrelation)
sorted_correlations = sorted(correlationsToMovie, key = lambda item: item['correlation'])
pprint.pprint('Correlations to "Mortal Kombat: Annihilation (1997)"')
pprint.pprint(sorted_correlations)
#pprint.pprint(transformPrefs)
#q4
```

Overall, the recommender was not awesome. I can be kind of picky when it comes to movies, and I do not think I share interests with people my age. I love period pieces such as 'Anna Karenina' and 'Pride and Prejudice'. I also love Holocaust remembrance pieces and historical documentaries. I dislike action and horror. I think it can be really difficult to make recommendations on artistic preferences. Recommendations for shopping may be easier, as customers who buy one item may certainly be interested in buying similar items or items from a similar brand. Art such as movies and music are totally subjective, and although genres may be similar, people may prefer certain actors, aesthetics, and settings.