

Chris Hinson: Developing, deploying, publishing and finding your own web service

Report

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Pre-word

This report is an attempt to document the functionality of the service. To view the code an eclipse project has been attached. Some of the tasks above overlap when attempting to display them. However the report will, using screenshots attempt to comprehensively display all functionality.

The Service has two front ends which can be switched between. One is the Servlet front end which has been kept in to show that these tasks were completed whilst building the project. The second is the, now default, Restful front end. Both are fully functional. The App has been deployed to the google app engine and can be tested at the link below.

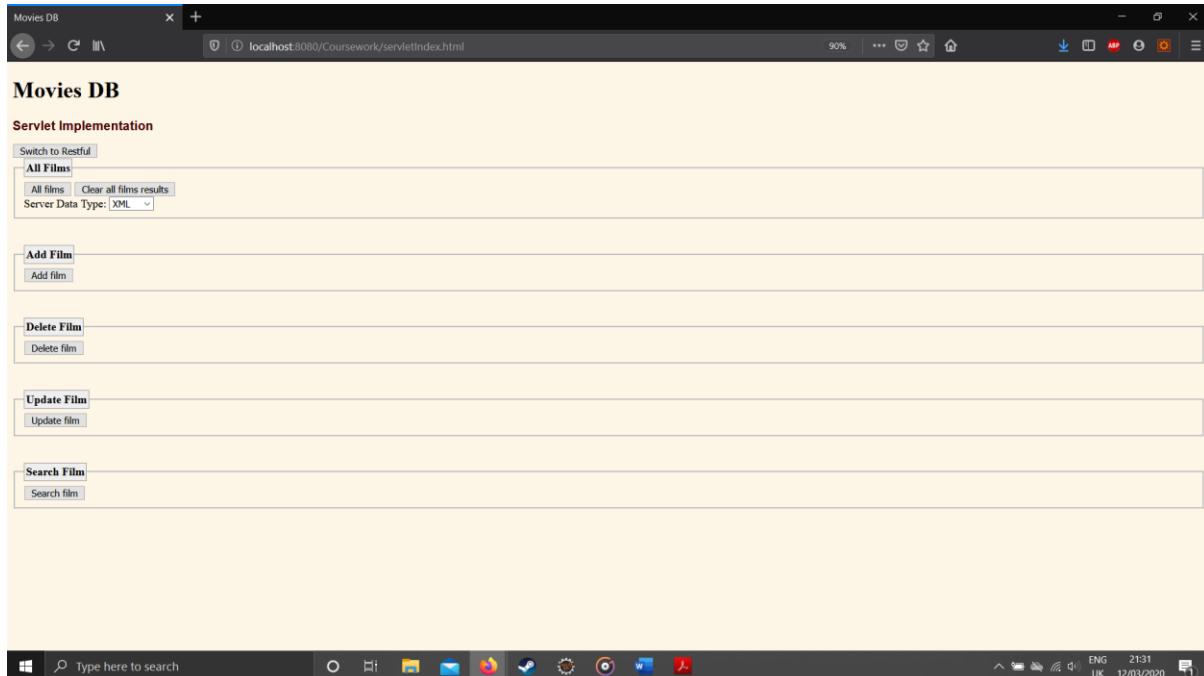
<https://alert-smoke-267912.appspot.com>

Inside this folder there is also a readme file that includes instructions on how to utilize the application. If there are any issues not covered in the readme that prevent the app from working please contact me at 07203712@stu.mmu.ac.uk .

Task 1-HTTP Call

This section will look at the servlet implementation of the Movies DB service.

This is the Homepage of the website



This is the result of pressing All Films with the xml data type

A screenshot of a Microsoft Edge browser window showing the result of pressing 'All films' with 'XML' selected. The title bar says 'Movies DB'. The address bar shows 'localhost:8080/Coursework/servletIndex.html'. The page content displays a table of movie records. The table has columns: ID, Title, Year, Director, Stars, and Review. The data is as follows:

ID	Title	Year	Director	Stars	Review
10001	1492 - CONQUEST OF PARADISE	1992	RIDLEY SCOTT	GERARD DEPARDIEU, ARMAND ASSANTE	The story of Columbus discovering America, beautifully shot in Costa Rica and excellently played by an top-notch cast including Tcheky Karyo, Michael Wincott and Sigourney Weaver as the Queen of Spain. Interestingly the script shows Columbus mercenary side by detailing the deals he wanted in return for discovering this new world before eventually having to return home in disgrace.
10002	187	1997	KEVIN REYNOLDS	SAMUEL L.JACKSON, JOHN HEARD	The title number is the police code for a homicide, and its heard more than once in this tough ghetto school drama. Samuel L.Jackson (Pulp Fiction / Sphere) plays a teacher who goes to an inner city school to find it completely out of control. After being robbed by one of the pupils he returns, determined to take the law into his own hands. From the director of Robin Hood - Prince Of Thieves.
10003	9 1/2 WEEKS	1986	ADRIAN LYNE	MICKEY ROURKE, KIM BASINGER	Director Lyne shows his pop video roots in this erotic tale reputedly based on a true story. Basinger falls for stubble-cheeked Rourke and a steamy, sadomasochistic relationship begins. It lasts the period of the title before the intensity gets too much for her. Joe Cockers version of You Can Leave Your Hat On accompanies a Basinger strip routine and then theres the infamous fridge sequence.
10004	976-EVIL II: THE RETURN	1988	JIM WYNORSKI	PATRICK O'BRYAN, DEBBIE JAMES	Sequel that still finds the ultimate telephone line, the Devils equivalent of an 0898 number, acquiring victims. The head of a high school taps into the line, hoping to receive supernatural powers to help him in his obsessive lust for a young student. Any one who gets in his way suffers a horrible death. With a supporting role for Brigitte Nielsen as a seductress in league with Satan himself.
10005	A BETTER TOMORROW	1986	JOHN WOO	CHOW YUN-FAT, LESLIE CHEUNG	The film which brought international stardom to star Chow Yun-Fat and director John Woo. A roller-coaster of a ride with brothers on both sides of the law becoming united in their quest for personal revenge. After forger Mark (Chow) is crippled and double crossed by an associate, cop Kit (Cheung) risks his badge to help him. Violent and gripping. Also available as a boxed set with a supplementary documentary and booklet.
10006	A BRONX TALE	1993	ROBERT DE NIRO	ROBERT DE NIRO, CHAZZ PALMINTERI	De Niro's directorial debut, taken from co-star Palminteri's own stage play. De Niro leads a cast of virtual unknown as a hard-working Bronx bus driver, alarmed at his sons fascination with the local underworld figures. But the lad is involved even deeper than he knows and soon hell have to confront the gangsters in an effort to win back his sons respect.
10007	A CHILD LOST FOREVER	1993	CLAUDIA WEILL	BEVERLY DANGELO, WILL PATTON	Another of the Odyssey labels seemingly endless supply of true-life weepies, this one involves a young woman (Beverly DAngelo from High Spirits) reluctantly giving up her child for adoption. Years later she discovers that it died in mysterious circumstances at the age of only three and decides to investigate.
10008	A FEW GOOD MEN	1992	ROB REINER	TOM CRUISE, JACK NICHOLSON	After the mysterious death of a young Marine in the barracks, a young navy Lawyer (Cruise) is called in to investigate. The further he delves into the mystery the more he is thwarted by the fearsome and unyielding Colonel Nathan Jessup (Nicholson), a man who knows the truth and is determined to conceal it...
10009	A LEAGUE OF THEIR OWN	1992	PENNY MARSHALL	GEENA DAVIS, TOM HANKS	Loosely based on the true story of the all-womens baseball league which was formed during the war while all the male players were fighting overseas. Concentrating on one team, the Rockford Peaches whose members include

This is the XML file that the table was created from

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<year>1992</year>
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<stars>GERARD DEPARDIEU, ARMAND ASSANTE</stars>
<review>
    The story of Columbus discovering America, beautifully shot in Costa Rica and excellently played by an top-notch cast including Tcheky Karyo, Michael Wincott and Sigourney Weaver as the Queen of Spain. Interestingly the script shows Columbus mercenary side by detailing the deals he wanted in return for discovering this new world before eventually having to return home in disgrace.
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<stars>SAMUEL L.JACKSON, JOHN HEARD</stars>
<review>
    The title number is the police code for a homicide, and its heard more than once in this tough ghetto school drama. Samuel L.Jackson (Pulp Fiction / Sphere) plays a teacher who goes to an inner city school to find it completely out of control. After being robbed by one of the pupils he returns, determined to take the law into his own hands. From the director of Robin Hood - Prince Of Thieves.
</review>
</film>
<film>
<id>10003</id>
<title>9 1/2 WEEKS</title>
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<director>ADRIAN LYNE</director>
<stars>MICKEY ROURKE, KIM BASINGER</stars>
<review>
    Director Lyne shows his pop video roots in this erotic tale reputedly based on a true story. Basinger falls for stubble-cheeked Rourke and a steamy, sadomasochistic relationship begins. It lasts the period of the title before the intensity gets too much for her. Joe Cockers version of You Can Leave Your Hat On accompanies a Basinger strip routine and then theres the infamous fridge sequence.
</review>
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<director>JIM WYNORSKI</director>
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This is the result of pressing all films with the json data type

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This is the JSON file that the table was created from

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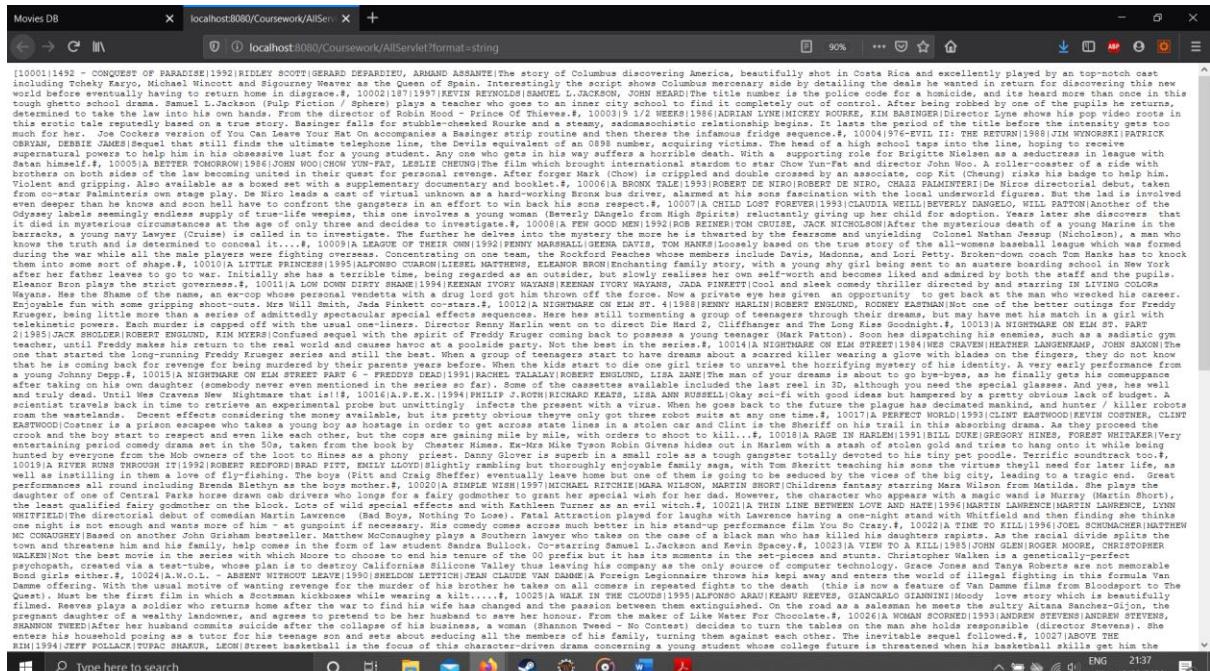
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  },
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    "year": 1986,
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    "stars": "PATRICK O'BRYAN, DEBBIE JAMES",
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  },
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    "director": "JOHN WOO",
    "stars": "CHOW YUN-FAT, LESLIE CHEUNG",
    "review": "The film which brought international stardom to star Chow Yun-Fat and director John Woo. A roller-coaster of a ride with brothers on both sides of the law becoming united in their quest for personal revenge. After forger Mark (Chow) is crippled and double crossed by an associate, cop Kit (Cheung) risks his badge to help him. Violent and gripping. Also available as a boxed set with a supplementary documentary and booklet."
  }
}

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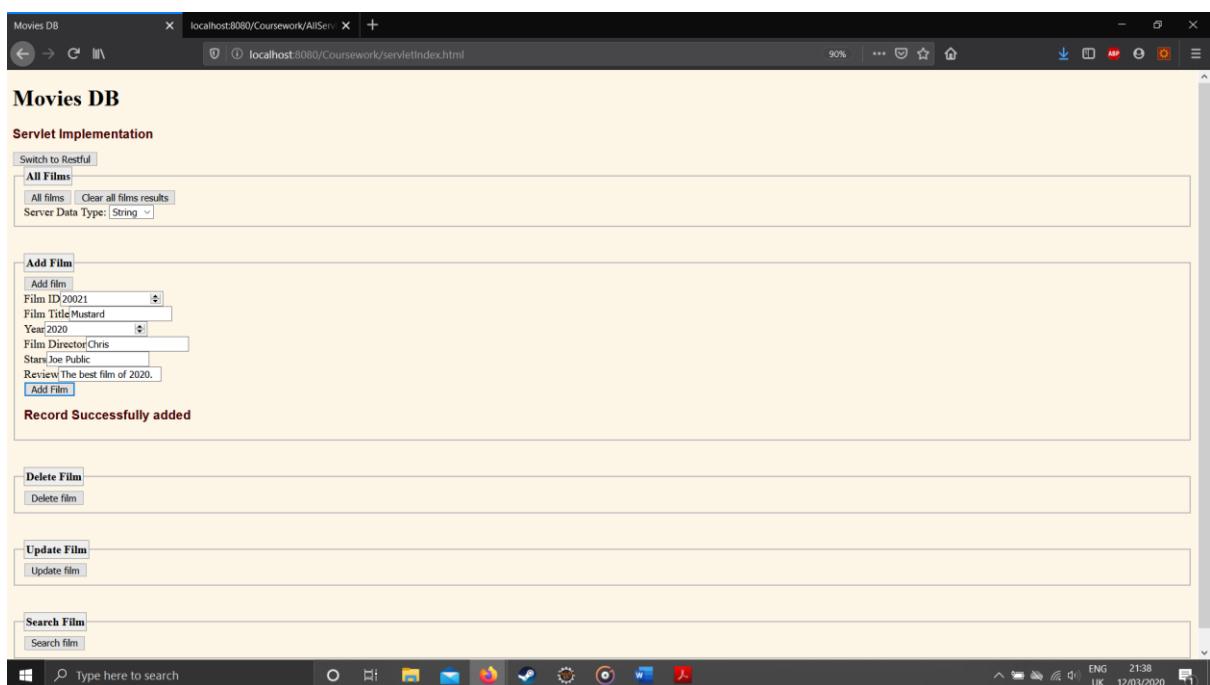
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10009	A LEAGUE OF THEIR OWN	1992	PENNY MARSHALL	GEENA DAVIS, TOM HANKS	Loosely based on the true story of the all-womens baseball league which was formed during the war while all the male players were fighting overseas. Concentrating on one team, the Rockford Peaches whose members include

This is the plain text String that the table was created from



[10001]1432 - CONQUEST OF PARADISE[1992]RIDLEY SCOTT|GERARD DEPARDIEU, ARMAND ASSANTE|The story of Columbus discovering America, beautifully shot in Costa Rica and excellently played by an top-notch cast including Eddy Karyo, Michael Wittet and Sigourney Weaver as the Queen of Spain. Interestingly the script shows Columbus mercenary side by detailing the deals he wanted in return for discovering this new world. The film is set around 1492, 10001[1993]ROBERT REDFORD|BRAD PITT, CLINT EASTWOOD|A young man who has been sent to prison for killing his wife returns home to find his wife has moved on with another man. He decides to take the law into his own hands. From the director of Robin Hood - Prince of Thieves#, 10003[1995]1/2 WEEKS[1996]ADRIAN LYNE|MICKEY ROUBLE, KIM BASINGER|Director Lyne shows his pop video roots in this erotic tale, reportedly based on a true story. Basinger falls for stubble-headed Rourke and a steamy, sadomasochistic relationship begins. It lasts the period of the title before the intensity gets too much for Basinger. 10004[1996]THE CANDY MAN[1992]ROBERT DE NIRO, DEBBIE JAMES|Sequel that still finds the ultimate telephone line, the Devil's equivalent of an 0898 number, acquiring victims. The head of a high school taps into the line, hoping to receive supernatural powers to help him in his obsessive lust for a young student. Any one who gets in his way suffers a horrible death. With a supporting role for Brigitte Nielsen as a seductress in league with Satan himself. 10005[1996]THE ROCK[1996]NIKOLAS WOODARD, MICHAEL CHABON|A team of brothers on both sides of the law become united in their quest for personal revenge. After former Mark (Chow) is crippled and double crossed by an associate, cop Kit (Cheung) risks his badge to help him. Violent and gripping. Also available as a boxed set with a supplementary documentary and booklet#. 10006[A BRONX TALE[1993]ROBERT DE NIRO|ROBERT DE NIRO, CHAZZ PALINTERI|De Niro's directorial debut, taken from co-star Palinteri's own stage play. De Niro leads a cast of virtually unknowns as he plays a working Bronx bus driver, alienating his son's fascination with the local underworld. But the lad is involved even though he knows and doesn't have to tell him. 10007[1994]A CHINESE FOLK TALE[1994]ALICE KIELLEY, ROBERT DUVALL, ROBERT DANGELO, WILLEM DAFOE|A Chinese folk tale about the Odysseus label seemingly endless supply of true-life weepies, this one involves a young woman (Beverly D'Angelo from High Spirits) reluctantly giving up her child for adoption. Years later she discovers that it died in mysterious circumstances at the age of only three and decides to investigate#. 10008[A FEW GOOD MEN[1992]ROB REINER|TONY CURRAN, JACK NICHOLSON|After the mysterious death of a young Marine in the heat of battle, his widow demands answers from the two men who were present. Both are career officers who knew the truth and is determined to conceal it...#, 10009[A IMAGE OF THEIR OWN[1992]PENNY MARSHALL|GRETNA DAVIS, TOM HANKS|Loosely based on the true story of the all-women baseball league which was formed during the war while all the male players were fighting overseas. Concentrating on one team, the Rockford Peaches whose members include Davis, Madonna, and Lori Petty. Broken-down coach Tom Hanks has to knock them into some shape. 10010[A LITTLE PRINCE[1995]MICHAEL MATTHEWS, CLAUDIO BRAVO|A touching family story with a young girl being sent to a new boarding school in New York after her mother leaves to go to Paris. Luckily she has a sensible teacher, an outside but淳厚的 teacher who over time becomes an adopted son. 10011[A LOW DOWN DIRTY SNAME[1994]KEENAN IVORY WAYANS, JADA PINKETT|Cool and sleek comedy thriller directed by and starring IN LIVING COLOURS Keenen Ivory Wayans, who also wrote the screenplay. It concerns a computer programmer who is targeted by a killer who has telekinetic powers. 10012[A MURDERER'S DOZEN[1995]ROBERT DUVALL, KIM WOODWARD, RONNIE COOPER, CLINT EASTWOOD|A killer robots is a prison escapee who takes a young boy as hostage in order to get across state lines in a stolen car and Clint is the Sheriff on his trail in this absorbing drama. As they proceed the crook and the boy start to respect and even like each other, but the cops are gaining mile by mile, with orders to shoot to kill...#, 10013[A NIGHTMARE ON ELM ST. PART 2[1985]JACQUELINE RODRIGUEZ|EMMY, KIM WOODWARD, RONNIE COOPER, CLINT EASTWOOD|Confused and lost with the spirit, Freddy Krueger comes back to possess a young teenager. Mark Fahey has to dispatch his enemies, and as he paddles gym teacher until Freddie makes his return to the world and decides to have a party. 10014[A NIGHTMARE ON ELM STREET[1984]JACQUELINE RODRIGUEZ, KIM WOODWARD, CLINT EASTWOOD, JOHN SANO|The one that started the long-running Freddy Krueger series and still the best. What a group of teenagers start to have dreams about a scarred killer wearing a glove with blades in the fingers, they do not know that he is coming back for revenge for being murdered by their parents years before. When the kids start to die one girl tries to unravel the horrifying mystery of his identity. A very early performance from a young actress who would go on to become a star. 10015[A NIGHTMARE ON ELM STREET[1981]JACQUELINE RODRIGUEZ, KIM WOODWARD, CLINT EASTWOOD|After taking on his own daughter (somebody never even mentioned in the series so far). Some of the cassettes available included the last reel in 3D, although you need the special glasses. And yes, he well and truly dead. Until Wes Craven's New Nightmare that is!#, 10016[A.P.X.[1994]PHILIP J. ROTUNDO|RICHARD KEATON, LISA ANN RUSSELL|Okay sci-fi with good ideas but hampered by a pretty obvious lack of budget. A scientist travels back in time to retrieve an experimental probe but unwittingly infects the present with a virus. When he goes back to the future, the plague has decimated mankind and hunting killer robots run amok. 10017[A PEEP IN THE EAVES[1995]ROBERT DUVALL, CLINT EASTWOOD, CLINT EASTWOOD|Based on the true story of the serial killer John Wayne Gacy. 10018[A RAGE IN HARLEM[1991]BILLY DUKE|GREGORY HINES, FOREST WHITAKER|Very interesting film about the life of Gregory Hines, a tap dancer who became a legend. 10019[A RIVER RUNS THROUGH IT[1992]ROBERT REDFORD|BRAD PITT, EMILY LOIZOS|Lighthearted rambling but thoroughly enjoyable movie saga, with Tom Skerrit teaching his sons the virtues they'll need for later life, as well as instilling in them a love of fly-fishing. The boys (Pitt and Craig Sheffer) eventually leave home but one of them is going to be seduced by the vices of the big city, leading to a tragic end. Great performances all round. 10020[A SHOT IN THE DARK[1994]ROBERT DUVALL, CLINT EASTWOOD, CLINT EASTWOOD|Based on the true story of the serial killer Dennis Rader. 10021[A SHOT IN THE DARK[1990]ROBERT DUVALL, CLINT EASTWOOD, CLINT EASTWOOD|Based on the true story of the serial killer Dennis Rader. 10022[A TIME TO KILL[1996]JOEL SCHUMACHER|MC CONAGHAYE [Based on another John Grisham best-seller. Matthew McConaughey plays a Southern lawyer who takes on the case of a black man who has killed his daughters rapists. As the racial divide splits the town and threatens him and his family, he helps others in the form of law student Sandra Bullock. Co-starring Samuel L. Jackson and Kevin Spacey#. 10023[A VIEW TO A KILL[1985]ROBIN GLEN ROGER MOORE, CHRISTOPHER WALKER, ROBERT DUVALL, CLINT EASTWOOD, CLINT EASTWOOD|Based on the James Bond novel by Ian Fleming. A secret agent (Roger Moore) is sent to assassinate a powerful psychopath, created via a test-tube, whose plan is to destroy California's Silicon Valley thus leaving his company as the only source of computer technology. Grace Jones and Tanya Roberts are not memorable Bond girls either. 10024[A.W.O.L. - ABSENT WITHOUT LEAVE[1990]SHELDON LETTUCE|JEAN CLAUDE VAN DAMME|A Foreign Legionnaire throws his kepi away and enters the world of illegal fighting in this formula Van Damme movie. 10025[A WALK IN THE CLOUDS[1995]ALFONSO ARAU|KEENAN REEVES, GIANCARLO GIANNINI|Moody love story which is beautifully filmed. Reeves plays a soldier who returns home after the war to find his wife has changed and the passion between them extinguished. On the road as a salesman he meets the sultry Almud Sanchez-Gijon, the pregnant daughter of a wealthy landowner, and agrees to pretend to be her husband to save her honour. From the maker of Little Women For Chocolate#. 10026[A WOMAN'S WORK[1993]ANDREW STEVENS, SEAN PENN, ROBERT DUVALL|Based on the true stories of women who work in sweatshops in Asia. No one is safe from exploitation. Not even the wife of a sensible householder (Penelope Ann Miller). She enters his household posing as a tutor for his teenage son and gets about seducing all the members of his family, turning them against each other. The inevitable sequel followed. 10027[ABOVE THE RIM[1994]JEFF POLLACK|TUPAC SHAKUR, LEON|Street basketball is the focus of this character-driven drama concerning a young student whose college future is threatened when his basketball skills get him the

This is the result of adding a film to the database



This is the result of searching for the film title we just added (“Mustard”) to the database with XML format

The screenshot shows a Windows desktop with a web browser window open at localhost:8080/Coursework/servletIndex.html. The browser has four tabs:

- Add Film:** Shows fields for Film ID (20021), Title (Mustard), Year (2020), Director (Chris), and Stars (Joe Public). A review is also present. An "Add Film" button is shown, and a message "Record Successfully added" is displayed.
- Delete Film:** Shows a "Delete film" button and a dropdown for Film ID (20021). A message "Error, record deletion has failed" is displayed.
- Update Film:** Shows a "Update film" button.
- Search Film:** Shows search fields for Film Title (Mustard) and Server Data Type (XML). Below is a table:

ID	Title	Year	Director	Stars	Review
20021	Mustard	2020	Chris	Joe Public	The best film of 2020.

This is the XML file the table was built from

The screenshot shows a Windows desktop with a web browser window open at localhost:8080/Coursework/SearchServlet?format=xml&film-title=s=Mustard. The browser displays the XML document structure:

```
<list>
<film>
<id>20021</id>
<title>Mustard</title>
<year>2020</year>
<director>Chris</director>
<stars>Joe Public</stars>
<review>The best film of 2020.</review>
</film>
</list>
```

This is the result of searching for the film title we just added (“Mustard”) to the database with JSON format

The screenshot shows a web browser window titled "Movies DB" with the URL "localhost:8080/Coursework/rest/film". The page displays a search interface for films. A search bar at the top contains the text "Film Title: Mustard" and a dropdown menu set to "JSON". Below the search bar is a table with the following data:

Id	Title	Year	Director	Stars	Review
1	20021	Mustard	2020	Chris	Joe Public The best film of 2020.

This is the JSON file the table was constructed from

The screenshot shows a web browser window titled "localhost:8080/Coursework/rest/film" with the URL "localhost:8080/Coursework/rest/filmsDB/search/json?film-title=s=Mustard". The page displays a JSON object representing the film data:

```
{
  "id": 20021,
  "title": "Mustard",
  "year": 2020,
  "director": "Chris",
  "stars": "Joe Public",
  "review": "The best film of 2020."
}
```

This is the result of searching for the film title we just added (“Mustard”) to the database with plain text format

Movies DB

localhost:8080/Coursework/rest/films

All Films

Add Film

Delete Film

Update Film

Search Film

Mustard

ID	Title	Year	Director	Stars	Review
20021	Mustard	2020	Chris	Joe Public	The best film of 2020.

This is the plain text file the table was constructed from

localhost:8080/Coursework/rest/films

localhost:8080/Coursework/rest/filmsDB/search/text?film-title-s=Mustard

ID	Title	Year	Director	Stars	Review
20021	Mustard	2020	Chris	Joe Public	The best film of 2020.

This is the result of searching for the film title “wars” with plain text format

The screenshot shows a browser window with three tabs open:

- Movies DB
- localhost:8080/Coursework/rest/film
- localhost:8080/Coursework/rest/film

The main content area displays a table titled "Search Film" with the following data:

ID	Title	Year	Director	Stars	Review
10801	PRIVATE WARS	1992	JOHN WEIDNER	STEVE RAILSBACK, MICHAEL CHAMPION	A neighbourhood determined to take a stance on street crime and petty drug dealing decides to hire a battle-hardened mercenary to patrol their streets and make them safe again. But they come up with an down-on-his luck private eye with a taste for the bottle in this action / comedy. Stars Steve Railsback from Lifeforce.
10954	STAR WARS	1978	GEORGE LUCAS	MARK HAMILL, HARRISON FORD	The original, the one that started the whole ball rolling, and if you dont know the plot leave this website immediately! Essentially an old-fasion Saturday morning pictures episode in space, with the good guys taking on and defeating the baddies, led by the menacing, wheezing Darth Vader, using his Death Star to destroy entire planets. Also features Carrie Fisher with a really silly hairstyle.
11202	TIGER WARSAW	1988	AMIN Q. CHUDHRI	PATRICK SWAYZE, MARY MC DONNELL	Swayze is surprisingly serious in this sombre drama. After leaving his home town many years before after a fight with his father resulted in the old man being nearly killed, a young man returns to hopefully sort out his life. Naturally he is not welcomed everywhere and his deep-seated problems start to multiply. With Piper Laurie, Kay Ballard and Barbara Williams.
11254	V.I.WARSHAWSKI	1991	JEFF KANEW	KATHLEEN TURNER, JAY O.SANDERS	Based on the character in the best-selling crime novels of Sara Paretsky, Kathleen Turner is the streetwise private eye with a soft spot and the two Christian names nobody can ever guess. She begins to investigate the murder of an ice hockey player and discovers nothing is what it really seems. Co-stars Charles Durning and Wayne (Seinfeld) Knight.

Below the table, the browser's developer tools Network tab is visible, showing four requests made to localhost:8080:

- GET /styles.css (200 OK, 973 B)
- GET /styles.css (200 OK, 973 B)
- GET /text?film-title=s+Mustard (200 OK, 216 B, 60 B)
- GET /text?film-title=s+wars (200 OK, 1.83 KB, 1.66 KB)

This is the result of updating the mustard record we recently added

The screenshot shows a browser window with three tabs open:

- Movies DB
- localhost:8080/Coursework/rest/film
- localhost:8080/Coursework/rest/film

The main content area displays several sections:

- Restful Implementation**: Includes "Switch to Servlets" and buttons for "All Films", "Clear all films results", and "Server Data Type: JSON".
- Add Film**: Buttons for "Add Film" and "Add film".
- Delete Film**: Button for "Delete film".
- Update Film**: Form fields for "Film ID: 20021", "Film Title: Mustard", "Year: 2020", "Film Director: Chris Hinson", "Stars: Joe Public", and "Review: The worst film ever.". A "Update Film" button is also present.
- Record Successfully Updated**: Confirmation message.
- Search Film**: Button for "Search film".

At the bottom of the screen, the Windows taskbar shows the system clock as 23:14 and the date as 12/03/2020.

To confirm the update we use the search function again

All Films

Add Film

Delete Film

Update Film

Record Successfully Updated

Search Film

ID	Title	Year	Director	Stars	Review
20021	Mustard	2020	Chris Hinson	Joe Public	The worst film ever.

This is the result of using the delete function on the film we just added

Movies DB

Restful Implementation

All Films

Add Film

Delete Film

Record Successfully deleted

Update Film

Search Film

ID	Title	Year	Director	Stars	Review
20021	Mustard	2020	Chris Hinson	Joe Public	The worst film ever.

To confirm the deletion we use the search function again

Movies DB

localhost:8080/Coursework/rest/film

localhost:8080/Coursework/rest/film

Movies DB

Restful Implementation

All Films

All films Clear all films results Server Data Type: JSON

Add Film

Add film

Delete Film

Delete film Film ID 20021 Delete Film

Record Successfully deleted

Update Film

Update film

Search Film

Search film Film Title mustard Server Data Type: String Search film

ID	Title	Year	Director	Stars	Review
----	-------	------	----------	-------	--------

Type here to search

23:17 ENG UK 12/03/2020

Here is a sample of the servlet code found in the controller package, this is the delete film servlet

```

eclipse EE workspace - Coursework/src/main/java/controller/DeleteServlet.java - Eclipse IDE
File Edit Source Refactor Navigate Search Project Run Window Help

Project Explorer
src/main/java
com.democo.jersey.first
com.democo.jersey.first.client
com.democo.jersey.jaxb1
com.democo.jersey.todo1
com.democo.jersey.todo1.client
com.democo.jersey.first
com.democo.jersey.first.client
com.democo.jersey.jaxb1
com.democo.jersey.todo1
com.democo.jersey.todo1.client
Coursework
App Engine [standard: java8] - appengine-web.xml
Deployment Descriptor: Coursework
JAX-WS Web Services
Java Resources
src/main/java
controller
DeleteServlet.java
DeleteServlet
RestfulFilmController.java
RestfulFilmController
SearchServlet.java
SearchServlet
UpdateServlet.java
UpdateServlet
serialVersionUID
updateService()
doGet(HttpServletRequest, HttpServletResponse)
doPost(HttpServletRequest, HttpServletResponse)
model
Film.java
FilmDAO.java

DeleteServlet.java
protected void doGet(HttpServletRequest request, HttpServletResponse response) {
    // TODO Auto-generated method stub
    response.setHeader("Cache-Control", "no-cache");
    response.setHeader("Pragma", "no-cache");
    FilmDAO dao = SingletonDAO.getSingletonDAO();
    String result = dao.deleteFilm(Integer.parseInt(ID));
    if (result == 1) {
        Success = "<h2> Record Successfully deleted</h2>";
    } else {
        Success = "<h2> Error, record deletion has failed</h2>";
    }
    request.setAttribute("SuccessString", Success);
    String outputPage = "/WEB-INF/results/films-result.jsp";
    RequestDispatcher dispatcher = request.getRequestDispatcher(outputPage);
    dispatcher.include(request, response);
}

/*
 * 
 */

```

Markers Properties Servers Data Source Explorer Snippets Console Progress

App Engine Standard at localhost [Stopped]

Tomcat v9.0 Server at localhost [Started, Restart]

Type here to search

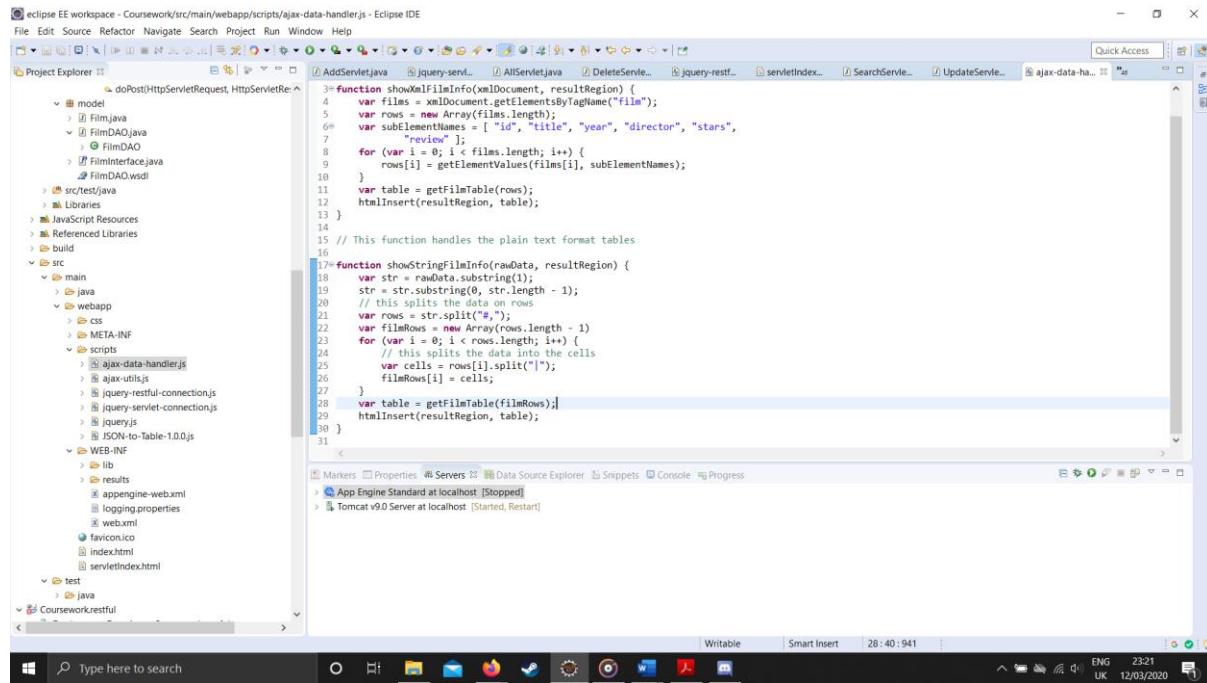
Writable Smart Insert 52:56:1642

23:19 ENG UK 12/03/2020

Task 2 – Formatting in json/xml/text

Examples of the successfully formatted code can be found on pages 3, 4 , 5, 6 and 7

Below is a sample of the java script used to handle the formatting, it is from the ajax-data-handler.js file.



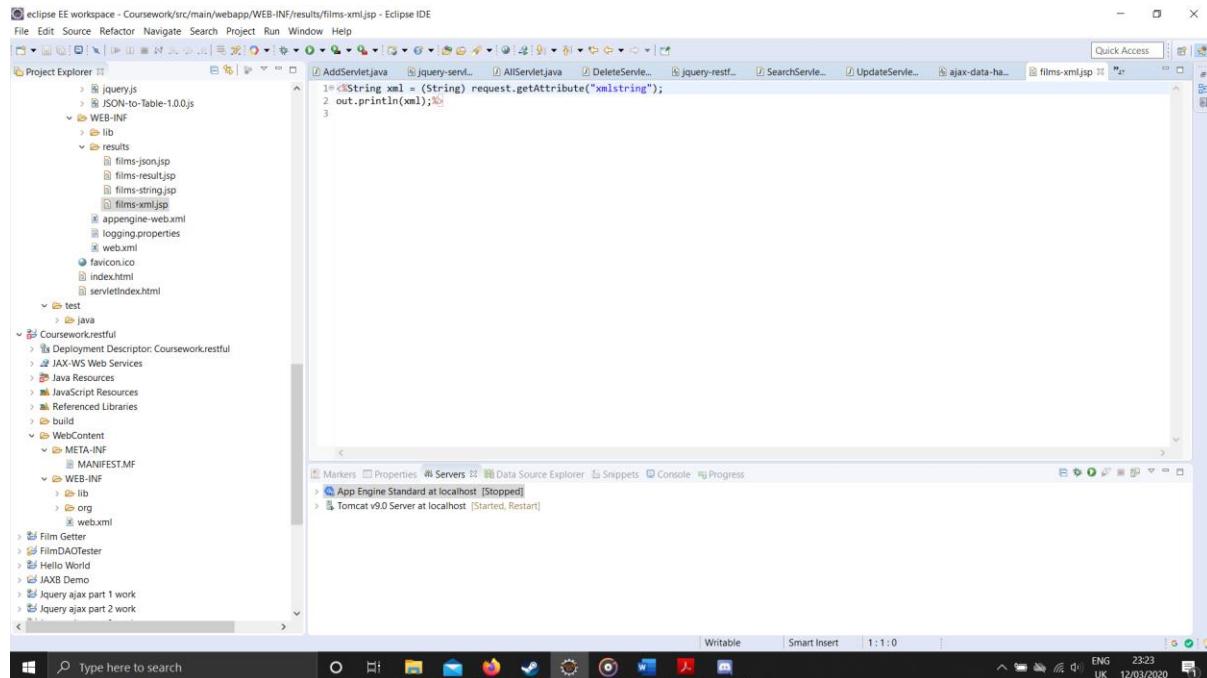
The screenshot shows the Eclipse IDE interface with the project 'Courseworkrestful' open. The 'ajax-data-handler.js' file is selected in the Project Explorer. The code in the editor is as follows:

```
3= function showXmlFileInfo(xmlDocument, resultRegion) {
4   var films = xmlDocument.getElementsByTagName("film");
5   var rows = new Array(films.length);
6   var subElementNames = [ "id", "title", "year", "director", "stars",
7     "review" ];
8   for (var i = 0; i < films.length; i++) {
9     rows[i] = getElementsValues(films[i], subElementNames);
10  }
11  var table = getFilmTable(rows);
12  htmlInsert(resultRegion, table);
13 }
14
15 // This function handles the plain text format tables
16
17= function showStringFilmInfo(strData, resultRegion) {
18  var str = strData.substring(1);
19  str = str.substring(0, str.length - 1);
20  // this splits the data on rows
21  var rows = str.split("\n");
22  var filmRows = new Array(rows.length - 1);
23  for (var i = 0; i < rows.length; i++) {
24    // this splits the data into the cells
25    var cells = rows[i].split("|");
26    filmRows[i] = cells;
27  }
28  var table = getFilmTable(filmRows);
29  htmlInsert(resultRegion, table);
30 }
31
```

The status bar at the bottom indicates the file is Writable and the time is 28:40:941. The bottom right shows the system tray with icons for battery, signal, and date/time (23/03/2020).

The formatting was also handled by the JSON-to-Table1.0.0.js file. This is an external library that was added to handle JSON.

Below is an example of the JSP outpage that the servlets utilised, the file is films-xml.jsp



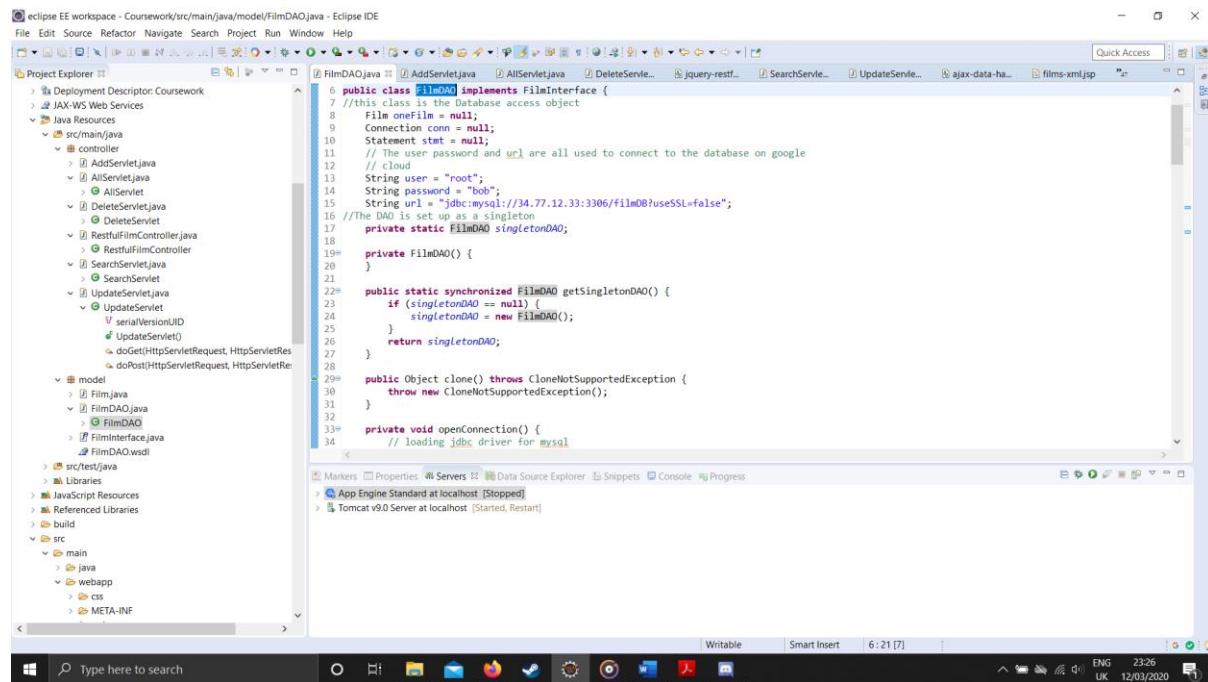
The screenshot shows the Eclipse IDE interface with the project 'Courseworkrestful' open. The 'films-xml.jsp' file is selected in the Project Explorer. The code in the editor is as follows:

```
1= String xml = (String) request.getAttribute("xmlstring");
2 out.println(xml);
3
```

The status bar at the bottom indicates the file is Writable and the time is 1:1:0. The bottom right shows the system tray with icons for battery, signal, and date/time (23/03/2020).

Task 3 – Cloud Implementation

The database utilised by the DAO is located on google cloud. Below is a screenshot from the FilmDAO with the connection details



A screenshot of the Eclipse IDE interface. The left pane shows the Project Explorer with various Java files and resources. The right pane displays the code for `FilmDAO.java`. The code implements the `FilmInterface` and uses JDBC to connect to a MySQL database on Google Cloud. It includes a static singleton pattern for managing the database connection.

```
public class FilmDAO implements FilmInterface {
    //this class is the Database access object
    Film oneFilm = null;
    Connection conn = null;
    Statement stmt = null;
    // The user password and url are all used to connect to the database on google
    // cloud
    String user = "root";
    String password = "bob";
    String url = "jdbc:mysql://34.77.12.33:3306/filmDB?useSSL=false";
    //The DAO is set up as a singleton
    private static FilmDAO singletonDAO;

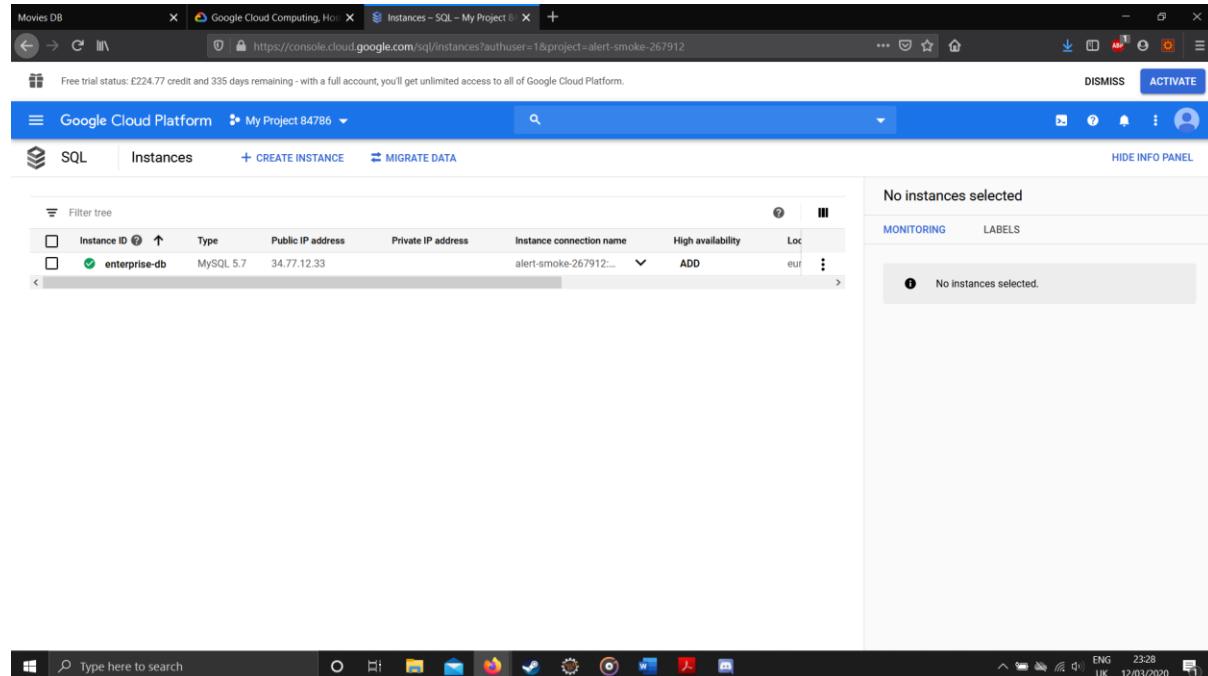
    private FilmDAO() {
    }

    public static synchronized FilmDAO getSingletonDAO() {
        if (singletonDAO == null) {
            singletonDAO = new FilmDAO();
        }
        return singletonDAO;
    }

    public Object clone() throws CloneNotSupportedException {
        throw new CloneNotSupportedException();
    }

    private void openConnection() {
        // loading jdbc driver for mysql
    }
}
```

Below is the details of the app and database on google cloud



A screenshot of the Google Cloud Platform SQL Instances page. It shows a single instance named `enterprise-db` of type MySQL 5.7. The instance has a Public IP address of 34.77.12.33 and is connected to a project named `My Project 84786`. The page also includes monitoring and labeling options.

Instance ID	Type	Public IP address	Private IP address	Instance connection name	High availability	Loc
enterprise-db	MySQL 5.7	34.77.12.33		alert-smoke-267912...	ADD	eur

Here is the list of databases on that instance

Name	Character set	Collation	Type
information_schema	utf8	utf8_general_ci	System
filmDB	utf8	utf8_general_ci	User
mysql	utf8	utf8_general_ci	System
performance_schema	utf8	utf8_general_ci	System
sys	utf8	utf8_general_ci	User

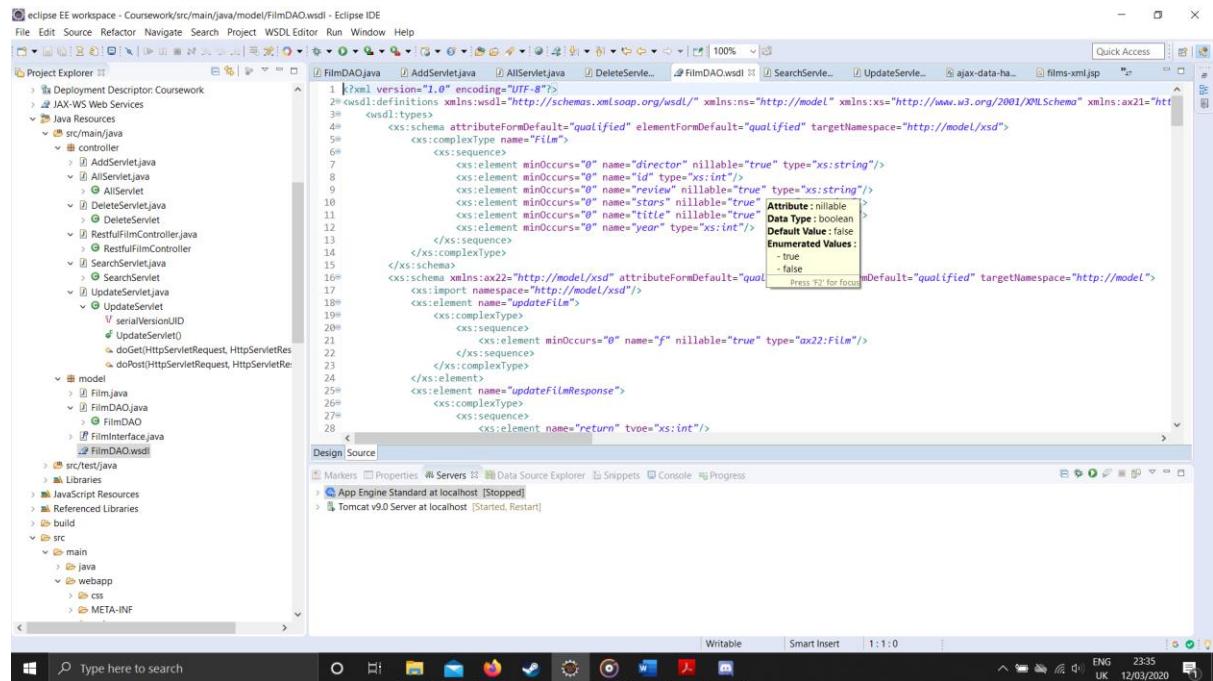
The app itself can be deployed using the google app engine as shown below it can be found on <https://alert-smoke-267912.appspot.com>

Below is a screenshot from the Deployed Google App Engine Restful page with the all films function having been activated

ID	Title	Year	Director	Stars	Review
10001	1492 - CONQUEST OF PARADISE	1992	RIDLEY SCOTT	GERARD DEPARDIEU, ARMAND ASSANTE	The story of Columbus discovering America, beautifully shot in Costa Rica and excellently played by an top-notch cast including Cheky Karyo, Michael Wincott and Sigourney Weaver as the Queen of Spain. Interestingly the script shows Columbus mercenary side by detailing the deals he wanted in return for discovering this new world before eventually having to return home in disgrace.
10002	187	1997	KEVIN REYNOLDS	SAMUEL L.JACKSON, JOHN HEARD	The title number is the police code for a homicide, and its heard more than once in this tough ghetto school drama. Samuel L.Jackson (Pulp Fiction / Sphere) plays a teacher who goes to an inner city school to find it completely out of control. After being robbed by one of the pupils he returns, determined to take the law into his own hands. From the director of Robin Hood - Prince Of Thieves.
10003	9 1/2 WEEKS	1986	ADRIAN LYNE	MICKEY ROURKE, KIM BASINGER	Director Lyne shows his pop video roots in this erotic tale reputedly based on a true story. Basinger falls for stubble-cheeked Rourke and a steamy, sadomasochistic relationship begins. It lasts the period of the title before the intensity gets too much for her. Joe Cookers version of You Can Leave Your Hat On accompanies a Basinger strip routine and then theres the infamous fridge sequence.
10004	976-EVIL II: THE RETURN	1988	JIM WYNORSKI	PATRICK O'BRYAN, DEBBIE JAMES	Sequel that still finds the ultimate telephone line, the Devils equivalent of an 0898 number, acquiring victims. The head of a high school taps into the line, hoping to receive supernatural powers to help him in his obsessive lust for a young student. Any one who gets in his way suffers a horrible death. With a supporting role for Brigitte Nielsen as a seductress in league with Satan himself.
10005	A BETTER TOMORROW	1986	JOHN WOO	CHOW YUN-FAT, LESLIE CHEUNG	The film which brought international stardom to star Chow Yun-Fat and director John Woo. A roller-coaster of a ride with brothers on both sides of the law becoming united in their quest for personal revenge. After forger Mark (Chow) is crippled and double crossed by an associate, cop Kit (Cheung) risks his badge to help him. Violent and gripping. Also available as a boxed set with a supplementary documentary and booklet.
10006	A BRONX TALE	1993	ROBERT DE NIRO	ROBERT DE NIRO,	De Niro's directorial debut, taken from co-star Palminteris own stage play. De Niro leads a cast of virtual unknowns as a hard-working Bronx bus driver, alarmed at his sons fascination with the local

Task 4 – SOAP/WSDL

A WSDL Document has been created of the FilmDAO and can be found in the Model



The screenshot shows the Eclipse IDE interface with the 'FilmDAO.wsdl' file open in the WSDL Editor. The code editor displays the XML schema for the 'updateFilm' operation. A tooltip is visible over the 'attributeFormDefault' attribute of the 'return' element, providing information about its type and default value.

```
<?xml version="1.0" encoding="UTF-8"?>
<wsdl:definitions xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/" xmlns:ns="http://model" xmlns:xs="http://www.w3.org/2001/XMLSchema" xmlns:ax21="http://model/xsd">
    <wsdl:types>
        <xss:schema attributeFormDefault="qualified" elementFormDefault="qualified" targetNamespace="http://model/xsd">
            <xss:complexType name="Film">
                <xss:sequence>
                    <xss:element minOccurs="0" name="director" nullable="true" type="xs:string"/>
                    <xss:element minOccurs="0" name="id" type="xs:int"/>
                    <xss:element minOccurs="0" name="review" nullable="true" type="xs:string"/>
                    <xss:element minOccurs="0" name="story" nullable="true" type="xs:string"/>
                    <xss:element minOccurs="0" name="title" nullable="true" type="xs:string"/>
                    <xss:element minOccurs="0" name="year" type="xs:int"/>
                </xss:sequence>
            </xss:complexType>
        </xss:schema>
    </wsdl:types>
    <wsdl:import namespace="http://model/xsd" />
    <xss:element name="updateFilm">
        <xss:complexType>
            <xss:sequence>
                <xss:element minOccurs="0" name="f" nullable="true" type="ax21:Film"/>
            </xss:sequence>
        </xss:complexType>
    </xss:element>
    <xss:element name="updateFilmResponse">
        <xss:complexType>
            <xss:sequence>
                <xss:element name="return" type="xs:int"/>
            </xss:sequence>
        </xss:complexType>
    </xss:element>
</wsdl:definitions>
```

Task 5 – REST

The database can be accessed using REST API. Below are a series of screenshots including the inspect element to show url calls

This is the GET all films function using XML format(also available in JSON and plain text)

Movies DB

Restful Implementation

All Films

Server Data Type: XML

ID	Title	Year	Director	Stars	Review
10001	1492 - CONQUEST OF PARADISE	1992	RIDLEY SCOTT	GERARD DEPARDIEU, ARMAND ASSANTE	The story of Columbus discovering America, beautifully shot in Costa Rica and excellently played by an top-notch cast including Tcheky Karyo, Michael Wincott and Sigourney Weaver as the Queen of Spain. Interestingly the script shows Columbus mercenary side by detailing the deals he wanted in return for discovering this new world before eventually having to return home in disgrace.
10002	187	1997	KEVIN REYNOLDS	SAMUEL L.JACKSON, JOHN HEARD	The title number is the police code for a homicide, and its heard more than once in this tough ghetto school drama. Samuel L Jackson (Pulp Fiction / Sphere) plays a teacher who goes to an inner city school to find it completely out of control. After being robbed by one of the pupils he returns, determined to take the law into his own hands. From the director of Robin Hood - Prince Of Thieves.
10003	9 1/2 WEEKS	1986	ADRIAN LYNE	MICKEY ROURKE, KIM BASINGER	Director Lyne shows his pop video roots in this erotic tale reputedly based on a true story. Basinger falls for stubble-cheeked Rourke and a steamy, sadomasochistic relationship begins. It lasts the period of the title before the intensity gets too much for her. Joe Cockers version of You Can Leave Your Hat On accompanies a Basinger strip routine and then theres the infamous fridge sequence.

Network tab showing the XML response:

```
https://alert-smoke-267912.appspot.com/rest/filmsDB/xml?format=xml
```

Request Headers (465 B):

- alt-svc: quic=":443"; ma=2592000; v="46...00; h3-Q043"; ma=2592000
- cache-control: private
- content-encoding: gzip
- content-length: 11414
- content-type: application/xml
- date: Thu, 12 Mar 2020 23:46:17 GMT
- server: Google Frontend

Request Params:

- format=xml

This is the POST new film function, the attributes are being passed as params.

Add Film

Film ID: 2021

Film Title: Mustard

Year: 2020

Film Director: Chris

Stars: Joe Public

Review: Greatest Film ever.

Add Film

Record Successfully Added

Delete Film

Delete film

Update Film

Network tab showing the POST request:

```
https://alert-smoke-267912.appspot.com/rest/filmsDB/add
```

Request Headers (465 B):

- alt-svc: quic=":443"; ma=2592000; v="46...00; h3-Q043"; ma=2592000
- cache-control: private
- content-encoding: gzip
- content-length: 11414
- content-type: application/xml
- date: Thu, 12 Mar 2020 23:46:17 GMT
- server: Google Frontend

Request Params:

- film-id-a: "20021"
- film-title-a: "Mustard"
- film-year-a: "2020"
- film-director-a: "Chris"
- film-stars-a: "Joe Public"
- film-review-a: "Greatest Film ever."

This is the GET search function for the film title just added (“Mustard”), the attributes are being passed as a query.

The screenshot shows a browser window with several tabs open. The active tab is titled "Movies DB" and displays a search result for the film "Mustard". The search interface includes fields for "Search film" and "Server Data Type: XML". The results table has columns for ID, Title, Year, Director, Stars, and Review. One row is shown: 20021 Mustard 2020 Chris Joe Public Greatest Film ever. Below the search interface, the browser's developer tools Network tab is visible, showing a list of requests. A query parameter "film-title-ic:Mustard" is highlighted in the "Params" section of the Network tab.

This is the PUT update film function for the film just added, the attributes are being passed in params

The screenshot shows a browser window with several tabs open. The active tab is titled "Movies DB" and displays an update form for the film "Mustard". The form fields include Film ID (20021), Film Title (Mustard), Year (2020), Director (Chris Hinson), and Stars (Joe Public). The review field contains "ReviewFilm of the year гаран". Below the form, a message says "Record Successfully Updated". At the bottom, there is a "Search Film" section and the browser's developer tools Network tab, which shows a list of requests. A form parameter "film-id-ic:20021" is highlighted in the "Params" section of the Network tab.

This is the film being searched for again after the update

The screenshot shows a browser window with several tabs open. The active tab is titled "Movies DB" and displays a form titled "Update Film". The form contains fields for "Film ID" (20021), "Film Title" (Mustard), "Year" (2020), "Film Director" (Chris Hinson), and "Stars" (Joe Public). Below the form is a message: "Record Successfully Updated". Below this, there is a "Search Film" section with a search bar containing "Mustard" and a table showing one result: "20021 Mustard 2020 Chris Hinson Joe Public Film of the year guaranteed". At the bottom of the browser window, the developer tools Network tab is visible, showing a series of requests and responses related to the update operation.

This is the film being deleted, the attributes are being passed in the params

The screenshot shows a browser window with several tabs open. The active tab is titled "Movies DB" and displays a form titled "Delete Film". The form contains a field for "Film ID" (20021) and a "Delete Film" button. Below the form is a message: "Record Successfully deleted". Below this, there is a "Search Film" section with a search bar containing "Mustard" and a table showing one result: "20021 Mustard 2020 Chris Hinson Joe Public Film of the year guaranteed". At the bottom of the browser window, the developer tools Network tab is visible, showing a series of requests and responses, including a DELETE request with the parameter "film-id-d=20021" in the URL.

This the film being searched for again after the deletion

The screenshot shows a sequence of three web pages:

- Delete Film:** A form with a dropdown menu showing "Delete film". Below it is a message: "Record Successfully deleted".
- Update Film:** A form with a dropdown menu showing "Update film".
- Search Film:** A search interface with a dropdown menu showing "Search film". The search bar contains "Film Title:Mustard". The results table has columns: ID, Title, Year, Director, Stars, Review. One row is highlighted with a yellow background.

Below the browser window, the developer tools Network tab is open, showing a list of requests. One request for "alert-smoke-26791.../xml?film-title=s:Mustard" is selected, showing details like status 200, method GET, and response size 409 B.

Here is a sample of the REST code found in the file RestfulFilmController.java inside the controller

```

eclipse EE workspace - Coursework/src/main/java/controller/RestfulFilmController.java - Eclipse IDE
File Edit Source Refactor Navigate Search Project Run Window Help
Project Explorer  f AddServletJava  RestfulFilm...  AllServletJava  DeleteServlet...  FilmDAO.wsdl  UpdateServlet...  ajax-data-h...  films-xml.jsp  ...
src/main/java
com.democo.jersey
com.democo.jersey.xml.client
com.democo.jersey.todo
com.democo.jersey.todo.client
Coursework
App Engine [standard: java] - appengine-web.xml
Deployment Descriptor: Coursework
JAX-WS Web Services
Java Resources
src/main/java
controller
AddServlet.java
AllServlet.java
AllServlet
DeletedServlet.java
DeleteServlet
RestfulFilmController.java
RestfulFilmController
addFilm(@FormParam(value="film-id-a"))
deleteFilmText(@FormParam(value="film-"))
getFilmsJSON(@QueryParam(value="film-"))
getFilmText()
getFilmXML()
ifNull(String, String, String, Film)
searchFilmJSON(@QueryParam(value="film-"))
searchFilmText(@QueryParam(value="film-"))
searchFilmXML(@QueryParam(value="film-"))
updateFilm(@FormParam(value="film-id-"))

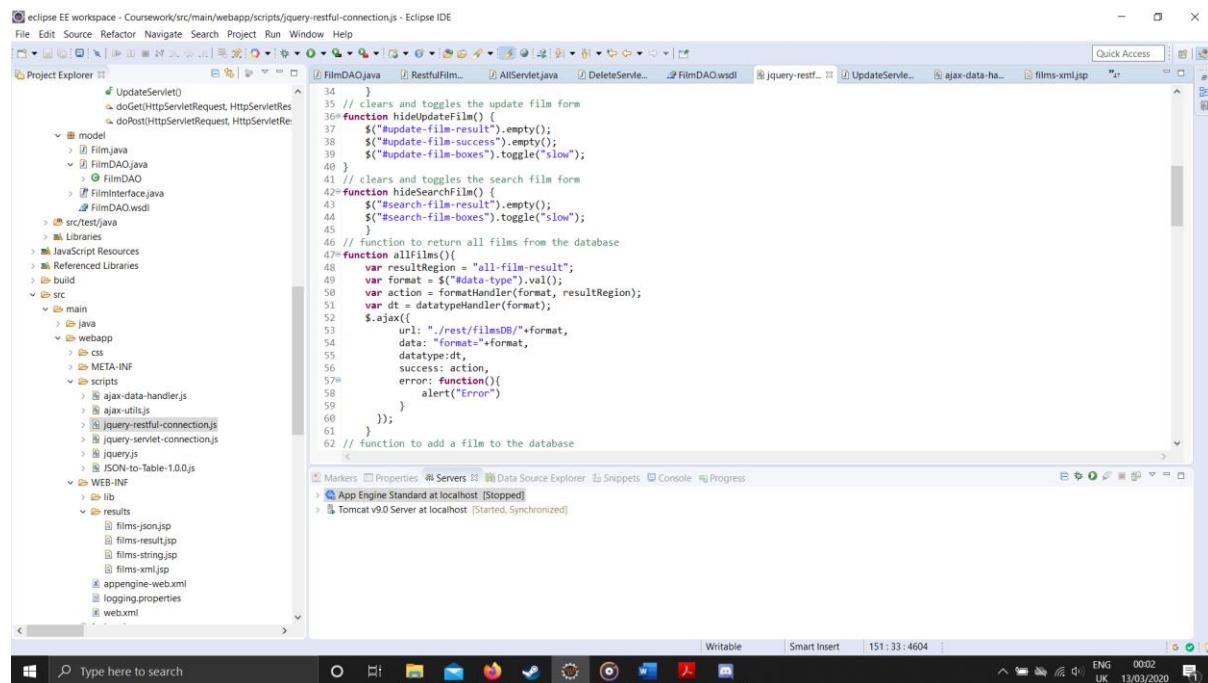
public int deleteFilm(int id) throws SQLException {
    int result = -1;
    String Success;
    // check a null entry has not been sent
    if (id == null)
        throw new RuntimeException("Delete: film with " + id + " not found");
    else {
        FilmDAO dao = FilmDAO.getInstance();
        result = dao.deleteFilm(Integer.parseInt(id));
    }
    // FilmDAO returns 0 or 1 depending on outcome, the outcome is translated into a
    // readable String and sent to the front end.
    if (result == 1) {
        Success = "<h2> Record Successfully deleted</h2>";
    } else {
        Success = "<h2> Error, record deletion has failed</h2>";
    }
    return Success;
}

```

The code implements a REST API for managing films. It includes methods for adding, deleting, and searching films. The `deleteFilm` method handles the deletion of a film by its ID. The response is a simple string indicating success or failure.

Task 6 – Client / Ajax

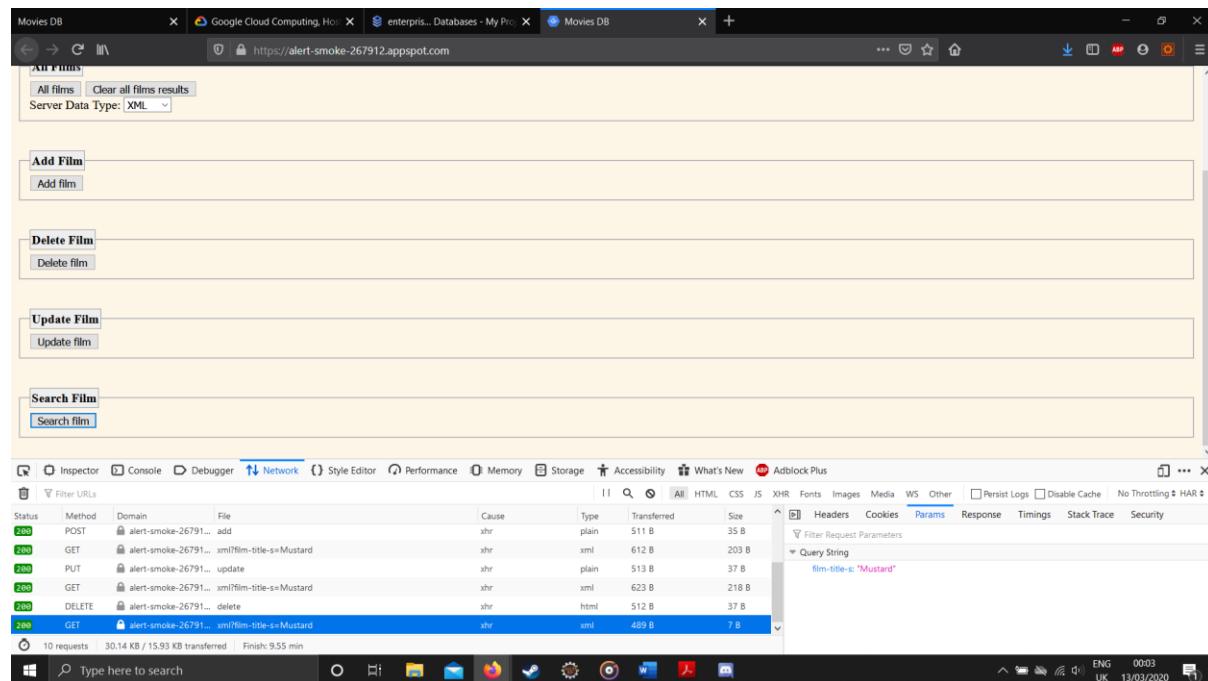
The front end client has been displayed throughout the previous screen shots. The jquery library was used to help create the front end, particularly with locating parts of the html, making calls to the database and also all the forms utilize the jquery toggle functionality to hide them when they are not in use. Below is a screenshot from the jquery-restful-connections.js page to display some of the ajax jquery code



```
34    }
35    // clears and toggles the update film form
36    function hideUpdateFilm() {
37        $("#update-film-result").empty();
38        $("#update-film-success").empty();
39        $("#update-film-boxes").toggle("slow");
40    }
41    // clears and toggles the search film form
42    function hideSearchFilm() {
43        $("#search-film-result").empty();
44        $("#search-film-boxes").toggle("slow");
45    }
46    // function to return all films from the database
47    function allFilms(){
48        var resultRegion = "all-film-result";
49        var format = $("#data-type").val();
50        var action = formatHandler(format, resultRegion);
51        var dt = datatypeHandler(format);
52        $.ajax({
53            url: "./rest/filmsDB/" + format,
54            data: "format=" + format,
55            datatype: dt,
56            success: action,
57            error: function(){
58                alert("Error")
59            }
60        });
61    }
62    // function to add a film to the database
```

Below is an example of the toggle function used

Before



Status	Method	Domain	File	Cause	Type	Transferred	Size
200	POST	alert-smoke-26791...	add	xhr	plain	511 B	35 B
200	GET	alert-smoke-26791...	xml?film-title=s=Mustard	xhr	xml	612 B	203 B
200	PUT	alert-smoke-26791...	update	xhr	plain	513 B	37 B
200	GET	alert-smoke-26791...	xml?film-title=s=Mustard	xhr	xml	623 B	218 B
200	DELETE	alert-smoke-26791...	delete	xhr	html	512 B	37 B
200	GET	alert-smoke-26791...	xml?film-title=s=Mustard	xhr	xml	489 B	7 B

After button pressed and search function used

The screenshot shows a web browser window titled "Movies DB" with the URL "https://alert-smoke-267912.appspot.com". The page displays a search results table for movies containing the word "Wars". The table has columns: ID, Title, Year, Director, Stars, and Review. The reviews are detailed descriptions of each movie.

ID	Title	Year	Director	Stars	Review
10801	PRIVATE WARS	1992	JOHN WEIDNER	STEVE RAILSBACK, MICHAEL CHAMPION	A neighbourhood determined to take a stance on street crime and petty drug dealing decides to hire a battle-hardened mercenary to patrol their streets and make them safe again. But they come up with an down-on-his luck private eye with a taste for the bottle in this action / comedy. Stars Steve Railsback from Lifeforce.
10954	STAR WARS	1978	GEORGE LUCAS	MARK HAMILL, HARRISON FORD	The original, the one that started the whole ball rolling, and if you dont know the plot leave this website immediately! Essentially an old-fashion Saturday morning pictures episode in space, with the good guys taking on and defeating the baddies, led by the menacing, wheezing Darth Vader, using his Death Star to destroy entire planets. Also features Carrie Fisher with a really silly hairstyle.
11202	TIGER WARSAW	1988	AMIN Q. CHUDHRI	PATRICK SWAYZE, MARY MC DONNELL	Swayze is surprisingly serious in this sombre drama. After leaving his home town many years before after a fight with his father resulted in the old man being nearly killed, a young man returns to hopefully sort out his life. Naturally he is not welcomed everywhere and his deep-seated problems start to multiply. With Piper Laurie, Kay Ballard and Barbara Williams.
11254	V.I. WARSHAWSKI	1991	JEFF KANEW	KATHLEEN TURNER, JAY O.SANDERS	Based on the character in the best-selling crime novels of Sara Paretsky, Kathleen Turner is the streetwise private eye with a soft spot and the two Christian names nobody can ever guess. She begins to investigate the murder of an ice hockey player and discovers nothing is what it really seems. Co-stars Charles Durning and Wayne (Seinfeld) Knight.

Upon pressing the form button again

The screenshot shows a web browser window titled "Movies DB" with the URL "https://alert-smoke-267912.appspot.com". The page displays a search results table for movies containing the word "Wars". The table has columns: ID, Title, Year, Director, Stars, and Review. The reviews are detailed descriptions of each movie.

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And once more to display the table has been cleared

