**ISEM 3006 Data Management in Business**

**Semester 1 2020/21**

**Exercise 1**

**On Relational Algebra**

**Answer (Q1-Q4)**

1. List the disc ID and movie number for those discs with cost higher than 120 and are held by the branch with branch number equal to 88.

RESTRICT Cost > 120 AND BranchNo = 88 ON Disc 🡪 DiscCost120orMore88

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| DiscID | MovieNo | DatePurchased | Cost | BranchNo |
| 1001 | 1 | 2015-09-15 | 200 | 88 |
| 3001 | 3 | 2016-11-10 | 150 | 88 |

PROJECT DiscID, MovieNo FROM DiscCost120orMore88 🡪 Result

|  |  |
| --- | --- |
| DiscID | MovieNo |
| 1001 | 1 |
| 3001 | 3 |

1. List the movie number and the movie title of the discs that are held by the branch with address ’20 Renfrew Road’.

Disc EQUIJOIN Branch ON Disc.BranchNo = Branch.BranchNo 🡪 BranchHeldDisc

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| discid | movieno | datepurchased | cost | disc.branchno | branch.branchno | branchaddress | branchphone |
| 1001 | 1 | 2015-09-15 | 200 | 88 | 88 | 111 Happy Village | 3422-6789 |
| 1002 | 1 | 2015-09-25 | 200 | 99 | 99 | 20 Renfrew Road | 3455-9987 |
| 2001 | 2 | 2016-07-04 | 300 | 99 | 99 | 20 Renfrew Road | 3455-9987 |
| 3001 | 3 | 2016-11-10 | 150 | 88 | 88 | 111 Happy Village | 3422-6789 |
| 3002 | 3 | 2017-02-22 | 120 | 99 | 99 | 20 Renfrew Road | 3455-9987 |
| 4001 | 4 | 2016-05-09 | 300 | 99 | 99 | 20 Renfrew Road | 3455-9987 |
| 3003 | 3 | 2017-05-05 | 120 | 44 | 44 | 88 Lucky Drive | 3466-8899 |
| 1003 | 1 | 2018-02-27 | 100 | 88 | 88 | 111 Happy Village | 3422-6789 |
| 1004 | 1 | 2018-03-15 | 85 | 99 | 99 | 20 Renfrew Road | 3455-9987 |

BranchHeldDisc EQUIJOIN Movie ON Disc.MovieNo = Movie.MovieNo 🡪 BranchHeldDiscMovie

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| discid | Disc.  movieno | datepurchased | cost | disc.  branchno | branch.  branchno | branchaddress | branchphone | Movie.  movieno | movietitle | releasedate | charge | category |
| 1001 | 1 | 2015-09-15 | 200 | 88 | 88 | 111 Happy Village | 3422-6789 | 1 | Batman Ultimate | 2015-09-01 | 20 | Action |
| 1002 | 1 | 2015-09-25 | 200 | 99 | 99 | 20 Renfrew Road | 3455-9987 | 1 | Batman Ultimate | 2015-09-01 | 20 | Action |
| 2001 | 2 | 2016-07-04 | 300 | 99 | 99 | 20 Renfrew Road | 3455-9987 | 2 | Happy Life | 2016-07-03 | 10 | Thriller |
| 3001 | 3 | 2016-11-10 | 150 | 88 | 88 | 111 Happy Village | 3422-6789 | 3 | A Christmas Story | 2016-11-05 | 5 | Drama |
| 3002 | 3 | 2017-02-22 | 120 | 99 | 99 | 20 Renfrew Road | 3455-9987 | 3 | A Christmas Story | 2016-11-05 | 5 | Drama |
| 4001 | 4 | 2016-05-09 | 300 | 99 | 99 | 20 Renfrew Road | 3455-9987 | 4 | Pyramid Raider | 2013-11-15 | 10 | Action |
| 3003 | 3 | 2017-05-05 | 120 | 44 | 44 | 88 Lucky Drive | 3466-8899 | 3 | A Christmas Story | 2016-11-05 | 5 | Drama |
| 1003 | 1 | 2018-02-27 | 100 | 88 | 88 | 111 Happy Village | 3422-6789 | 1 | Batman Ultimate | 2015-09-01 | 20 | Action |
| 1004 | 1 | 2018-03-15 | 85 | 99 | 99 | 20 Renfrew Road | 3455-9987 | 1 | Batman Ultimate | 2015-09-01 | 20 | Action |

RESTRICT BranchAddress = '20 Renfrew Road' ON BranchHeldDiscMovie 🡪 DiscMoiveHeldByRenfrew

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| discid | Disc.  movieno | datepurchased | cost | disc.  branchno | branch.  branchno | branchaddress | branchphone | Movie.  movieno | movietitle | releasedate | charge | category |
| 1002 | 1 | 2015-09-25 | 200 | 99 | 99 | 20 Renfrew Road | 3455-9987 | 1 | Batman Ultimate | 2015-09-01 | 20 | Action |
| 2001 | 2 | 2016-07-04 | 300 | 99 | 99 | 20 Renfrew Road | 3455-9987 | 2 | Happy Life | 2016-07-03 | 10 | Thriller |
| 3002 | 3 | 2017-02-22 | 120 | 99 | 99 | 20 Renfrew Road | 3455-9987 | 3 | A Christmas Story | 2016-11-05 | 5 | Drama |
| 4001 | 4 | 2016-05-09 | 300 | 99 | 99 | 20 Renfrew Road | 3455-9987 | 4 | Pyramid Raider | 2013-11-15 | 10 | Action |
| 1004 | 1 | 2018-03-15 | 85 | 99 | 99 | 20 Renfrew Road | 3455-9987 | 1 | Batman Ultimate | 2015-09-01 | 20 | Action |

PROJECT Moive.MovieNo, MovieTitle FROM DiscMoiveHeldByRenfrew 🡪 Result

|  |  |
| --- | --- |
| Movie.  movieno | movietitle |
| 1 | Batman Ultimate |
| 2 | Happy Life |
| 3 | A Christmas Story |
| 4 | Pyramid Raider |

1. List the branch number and branch address of the branches that do not hold any disc.

Branch LEFT OUTER JOIN Disc ON Branch.BranchNo = Disc.BranchNo 🡪 AllBranchDisc

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| branch.  branchno | branchaddress | branchphone | discid | movieno | datepurchased | cost | disc.  branchno |
| 88 | 111 Happy Village | 3422-6789 | 1001 | 1 | 2015-09-15 | 200 | 88 |
| 99 | 20 Renfrew Road | 3455-9987 | 1002 | 1 | 2015-09-25 | 200 | 99 |
| 99 | 20 Renfrew Road | 3455-9987 | 2001 | 2 | 2016-07-04 | 300 | 99 |
| 88 | 111 Happy Village | 3422-6789 | 3001 | 3 | 2016-11-10 | 150 | 88 |
| 99 | 20 Renfrew Road | 3455-9987 | 3002 | 3 | 2017-02-22 | 120 | 99 |
| 99 | 20 Renfrew Road | 3455-9987 | 4001 | 4 | 2016-05-09 | 300 | 99 |
| 44 | 88 Lucky Drive | 3466-8899 | 3003 | 3 | 2017-05-05 | 120 | 44 |
| 88 | 111 Happy Village | 3422-6789 | 1003 | 1 | 2018-02-27 | 100 | 88 |
| 99 | 20 Renfrew Road | 3455-9987 | 1004 | 1 | 2018-03-15 | 85 | 99 |
| 55 | 53 Good Mall | 5566-1234 |  |  |  |  |  |

RESTRICT DiscID IS NULL ON AllBranchDisc 🡪 BranchHoldNoDisc

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| branch.  branchno | branchaddress | branchphone | discid | movieno | datepurchased | cost | disc.  branchno |
| 55 | 53 Good Mall | 5566-1234 |  |  |  |  |  |

PROJECT Branch.BranchNo, BranchAddress FROM BranchHoldNoDisc 🡪 Result

(You have to PROJECT Branch.BranchNo instead of Disc.BranchNo, since Disc.BranchNo's value is NULL.)

|  |  |
| --- | --- |
| branch.  branchno | branchaddress |
| 55 | 53 Good Mall |

1. List the branch number and the address of the branches which hold at least one disc.

Branch EQUIJOIN Disc ON Branch.BranchNo = Disc.BranchNo 🡪 BranchHoldingDisc

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| branch.  branchno | branchaddress | branchphone | discid | movieno | datepurchased | cost | disc.  branchno |
| 88 | 111 Happy Village | 3422-6789 | 1001 | 1 | 2015-09-15 | 200 | 88 |
| 99 | 20 Renfrew Road | 3455-9987 | 1002 | 1 | 2015-09-25 | 200 | 99 |
| 99 | 20 Renfrew Road | 3455-9987 | 2001 | 2 | 2016-07-04 | 300 | 99 |
| 88 | 111 Happy Village | 3422-6789 | 3001 | 3 | 2016-11-10 | 150 | 88 |
| 99 | 20 Renfrew Road | 3455-9987 | 3002 | 3 | 2017-02-22 | 120 | 99 |
| 99 | 20 Renfrew Road | 3455-9987 | 4001 | 4 | 2016-05-09 | 300 | 99 |
| 44 | 88 Lucky Drive | 3466-8899 | 3003 | 3 | 2017-05-05 | 120 | 44 |
| 88 | 111 Happy Village | 3422-6789 | 1003 | 1 | 2018-02-27 | 100 | 88 |
| 99 | 20 Renfrew Road | 3455-9987 | 1004 | 1 | 2018-03-15 | 85 | 99 |

PROJECT Branch.BranchNo, BranchAddress FROM BranchHoldingDisc 🡪 Result

|  |  |
| --- | --- |
| branch.  branchno | branchaddress |
| 88 | 111 Happy Village |
| 99 | 20 Renfrew Road |
| 44 | 88 Lucky Drive |