**Assignment—Relational Algebra**

**Total Point: 10**

**Student’s Name: Gabriel Nulman**

**Task A:**

**[(Expression 0.75 + Output relation 0.5) \* 4 = 5]**

Using the tables in page 2, construct relational algebra expressions to answer the following queries and represent the answer as a relation:

1. First and last names of the clients registered at Branch B003.
   1. Πfname, lname(σclient.clientno = registration.clientno AND branchno = “B003” (client ⨝ registration))
2. Which staff members were born after 1955?
   1. Πstaffno, fname, lname, position, sex, dob, salary(σdob > “12-31-1955” Staff)
3. List the flats with rent less than $500.
   1. Πpropertyno, street, city, postcode(σtype = “Flat” AND rent > 500 propertyforrent)
4. Telephone numbers of the owners who have property at London.
   1. Πtelno(σpropertyforrent.ownerno = privateowner.ownerno AND city = “London” (propertyforrent ⨝ privateowner))

**Task B:**

**[1\*5 = 5]**

Using the tables in page 2, show the relation (table including column headings) created by the following relational algebra expressions as a two-dimensional table:

1. fName,LName, rooms, renttype =preftype (Client X PropertyForRent) )

|  |  |  |  |
| --- | --- | --- | --- |
| **fname** | **lname** | **rooms** | **rent** |
| Aline | Stewart | 4 | $450 |
| Aline | Stewart | 3 | $375 |
| Aline | Stewart | 3 | $350 |
| Aline | Stewart | 4 | $400 |
| Mary | Tregear | 4 | $450 |
| Mary | Tregear | 3 | $375 |
| Mary | Tregear | 3 | $350 |
| Mary | Tregear | 4 | $400 |
| Mike | Ritchie | 6 | $650 |
| Mike | Ritchie | 5 | $600 |
| John | Kay | 4 | $450 |
| John | Kay | 3 | $375 |
| John | Kay | 3 | $350 |
| John | Kay | 4 | $400 |

1. LName,position city = “London” ( PropertyForRentJoin Staff ) )

|  |  |
| --- | --- |
| **Lname** | **position** |
| Lee | Assistant |

1. staffNo ( Registration ) Intersection 1 staffNo (PropertyForRent)

|  |
| --- |
| **staffNo** |
| SA9 |
| SG37 |
| SL41 |

1. branchNo (Branch) - branchNo (Staff )

|  |
| --- |
| **branchNo** |
| B002 |
| B004 |

1. fName,LName  propertyNo IS NULL (Staff  PropertyForRent))

|  |  |
| --- | --- |
| **Fname** | **lname** |
| Susan | Brand |
| John | White |

Branch Viewing

|  |  |  |  |
| --- | --- | --- | --- |
| **branchNo** | street | city | postcode |
| B002 | 56 Clover Dr | London | NW10 6EU |
| B003 | 163 Main St | Glasgow | G11 9QX |
| B004 | 32 Manse Rd | Bristol | BS99 1NZ |
| B005 | 22 Deer Rd | London | SWI 4EH |
| B007 | 16 Argyll St | Aberdeen | AB2 3SU |

|  |  |  |  |
| --- | --- | --- | --- |
| **clientNo** | **propertyNo** | viewDate | comment |
| CR76 | PG4 | 4/20/2001 | too remote |
| CR56 | PG36 | 4/28/2001 |  |
| CR62 | PA14 | 5/14/2001 | no dining room |
| CR56 | PA14 | 5/24/2001 | too small |
| CR56 | PG4 | 5/26/2001 |  |

**Client**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **clientNo** | fName | lName | telNo | prefType | maxRent |
| CR56 | Aline | Stewart | 0141-848-1825 | Flat | $350.00 |
| CR62 | Mary | Tregear | 01224-196720 | Flat | $600.00 |
| CR74 | Mike | Ritchie | 01475-392178 | House | $750.00 |
| CR76 | John | Kay | 0207-774-5632 | Flat | $425.00 |

**PrivateOwner**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **ownerNo** | fName | lName | Address | telNo |
| CO40 | Tina | Murphy | 63 Wells St, Glasgow G42 | 0141-943-1728 |
| CO46 | Joe | Keogh | 2 FergusDr, Aberdeen AB2 7SX | 01224-861212 |
| CO87 | Carol | Farrel | 6 Achray St, Glasgow G32 9DX | 0141-357-7419 |
| CO93 | Tony | Shaw | 12 Park Pl, Glasgow G4 0QR | 0141-225-7025 |

**PropertyForRent**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Propertyno** | street | city | Postcode | type | rooms | rent | ownerNo | staffNo | branchNo |
| PA14 | 16 Holhead | Aberdeen | AB7 5SU | House | 6 | $650.00 | CO46 | SA9 | B007 |
| PG16 | 5 Novar Dr | Glasgow | G12 9AX | Flat | 4 | $450.00 | CO93 | SG14 | B003 |
| PG21 | 18 Dale Rd | Glasgow | G12 | House | 5 | $600.00 | CO87 | SG37 | B003 |
| PG36 | 2 Manor Rd | Glasgow | G32 4QX | Flat | 3 | $375.00 | CO93 | SG37 | B003 |
| PG4 | 6 Lawrence St | Glasgow | G11 9QX | Flat | 3 | $350.00 | CO40 |  | B003 |
| PL94 | 6 Argyll St | London | NW2 | Flat | 4 | $400.00 | CO87 | SL41 | B005 |

**Registration**

|  |  |  |  |
| --- | --- | --- | --- |
| **clientNo** | branchNo | staffNo | dateJoined |
| CR56 | B003 | SG37 | 4/11/2000 |
| CR62 | B007 | SA9 | 3/7/2000 |
| CR74 | B003 | SG37 | 11/16/1999 |
| CR76 | B005 | SL41 | 1/2/2001 |

**Staff**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **staffNo** | fName | lname | position | sex | DOB | salary | branchNo |
| SA9 | Mary | Howe | Assistant | F | 2/19/1970 | 9,000.00 | B007 |
| SG14 | David | Ford | Supervisor | M | 3/24/1958 | 18,000.00 | B003 |
| SG37 | Ann | Beech | Assistant | F | 11/10/1960 | 12,000.00 | B003 |
| SG5 | Susan | Brand | Manager | F | 6/3/1940 | 24,000.00 | B003 |
| SL21 | John | White | Manager | M | 10/1/1945 | 30,000.00 | B005 |
| SL41 | Julie | Lee | Assistant | F | 6/13/1965 | 9,000.00 | B005 |