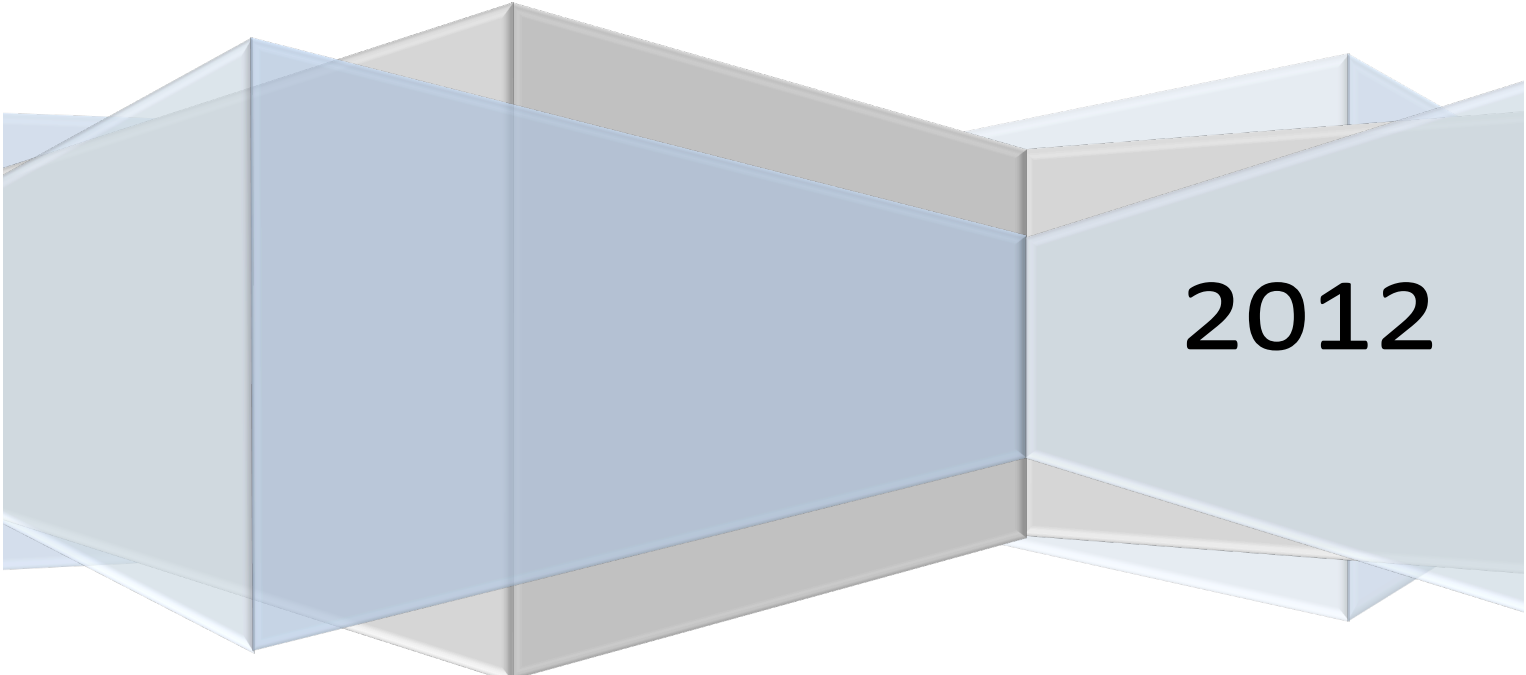


CMP7033

Databases for Enterprise

Assignment Part A

S12763849



2012

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Task 1: Entity-Relationship Model

Entity-Relationship Diagram

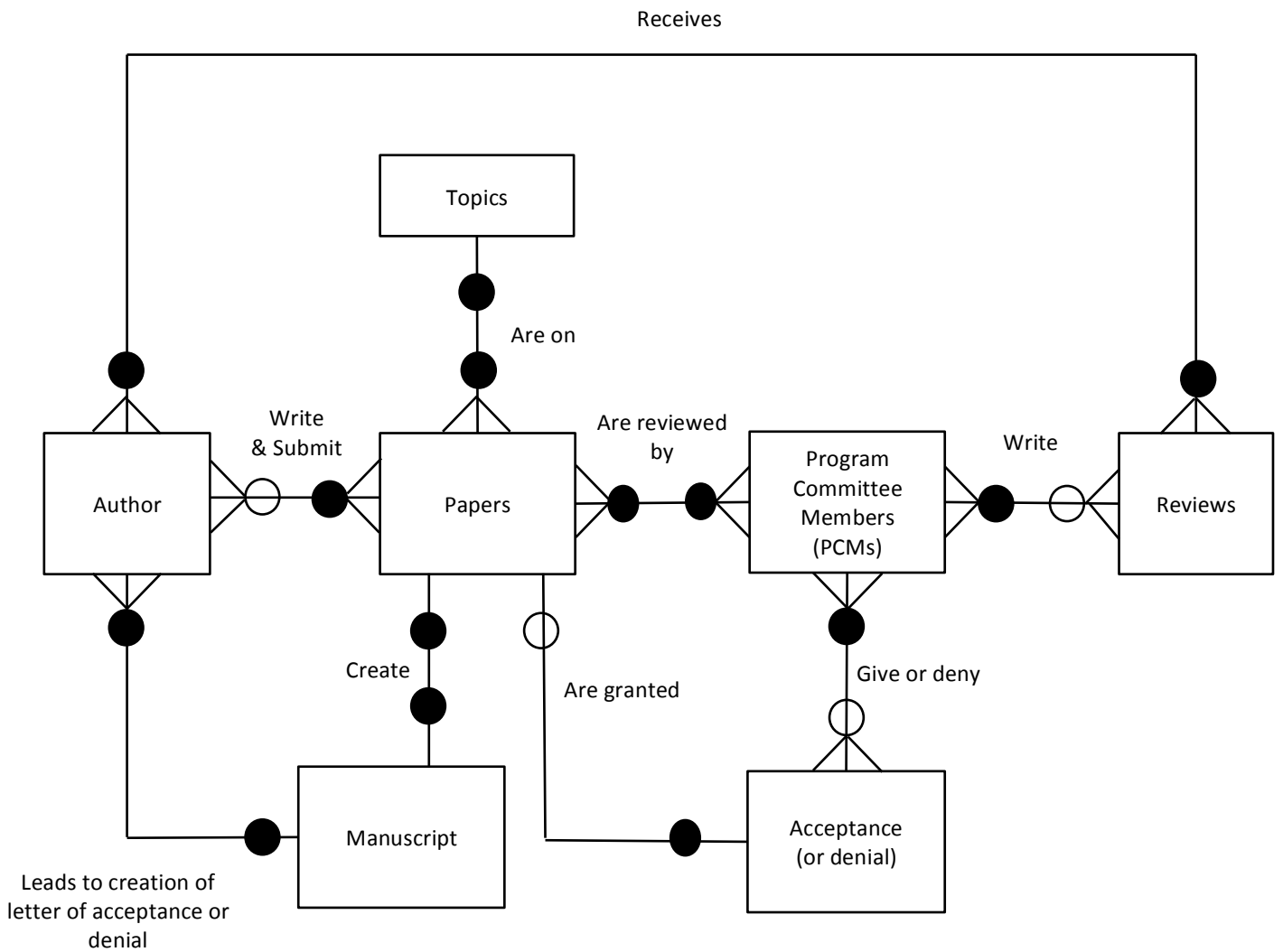


Figure 1: Entity Relationship Diagram

Entities

Authors

(**Author_ID**, Author_Name, Author_Email, Author_phone)

Papers

(**Paper_No**, Paper_Title, Paper_Topic)

Topics

(**Topic_ID**, Topic)

PCMs

(**PCM_ID**, PCM_Name, PCM_Email, PCM_Phone)

Reviews

(PCM_ID, Reviewers_Name, Relevance, Originality, Technical_Merit, Overall_Mark)

Acceptance

(Paper_No, Decision)

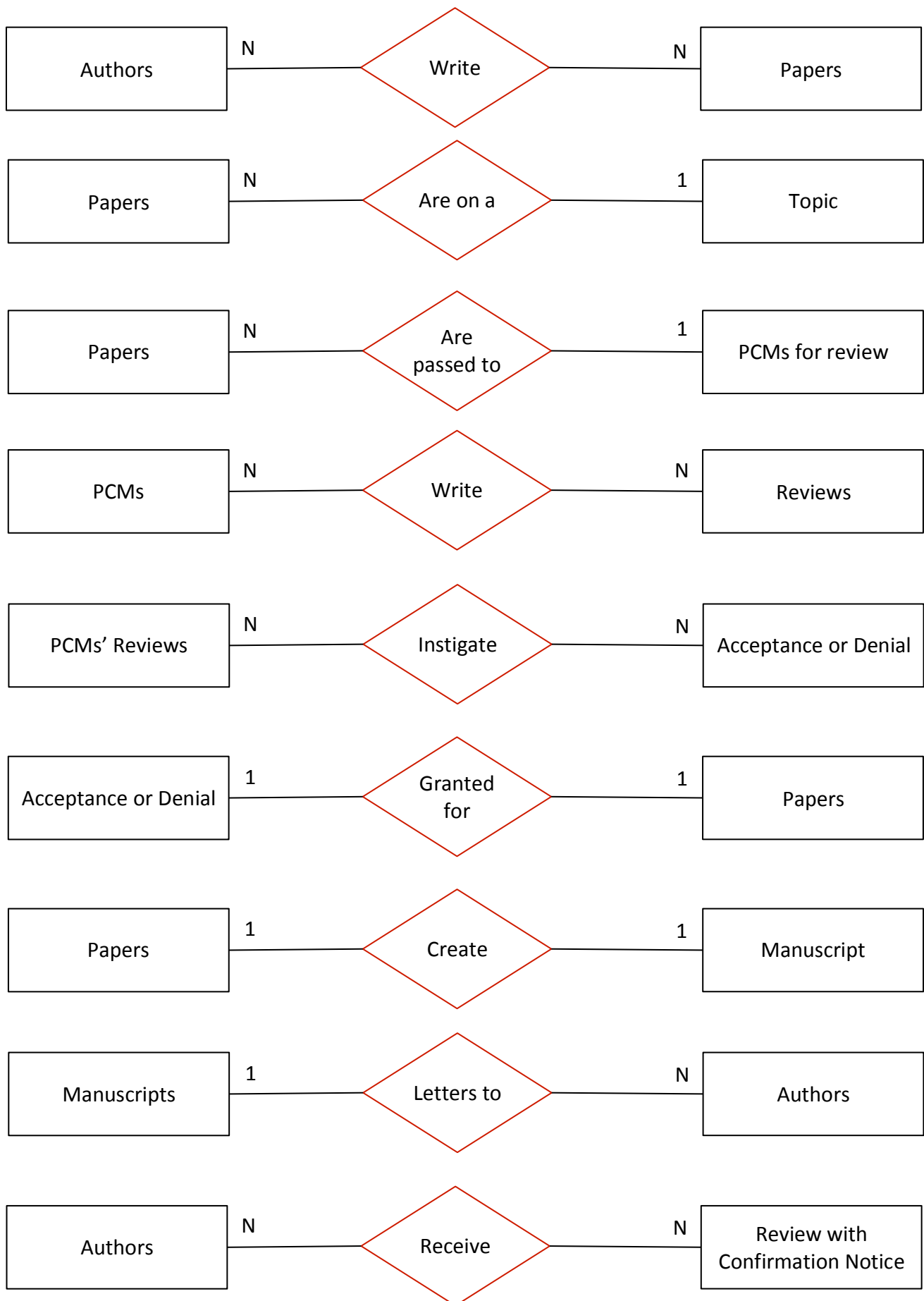
Manuscript details

(Paper_No, Page Number, Copyright, Received, Length, Format)

Assumptions/Constraints

- Multiple papers can be written by one or two authors, but no more.
- Authors can have similar (or same) names so an author ID is required and used.
- Each individual paper is on one specific topic.
- Each PCM oversees multiple topic areas and therefore papers.
- PCMs write one review per paper.
- A PCM covers no more than 4 topic areas.
- Only the lead author receives the confirmation letter and review.
- Acceptance or denial can be given to more than one author.
- Papers can have similar (or same) titles therefore a paper no is required and used.
- Each topic has just one topic ID.
- PCMs can have similar (or same) names so a PCM ID is required and used.
- No more than two authors write a paper.

Relationships



Task 2: Boyce-Codd Normal Form Relations

Un-normalised Data

Paper

| Paper No | Paper Title | Decision | Topic |
|----------|-------------|----------|-------|
| | | | |

Author

| Author Name | Email | Phone |
|-------------|-------|-------|
| | | |

Reviewer (PCM)

| Name | Topics | Email | Phone |
|------|--------|-------|-------|
| | | | |

Review (One or more per paper)

| Reviewers Name | Relevance | Originality | Technical Merit | Overall Mark |
|----------------|-----------|-------------|-----------------|--------------|
| | | | | |

Paper

| Paper No | Paper Title | Topic | Author | Email | Phone | Decision |
|----------|-------------|-------|--------|-------|-------|----------|
| | | | | | | |

Manuscript Details

| Page Number: | Copyright OK: | Received OK: | Length OK: | Format OK: |
|--------------|---------------|--------------|------------|------------|
| | Y/N | Y/N | Y/N | Y/N |

Normalisation

| Entities | Attributes | 1NF | 2NF | 3NF (BCNF) |
|----------------|-----------------|-----------------|-------------------|-------------------------|
| Author | Author Name | Author | Author | Author |
| Paper | Author Email | Name | ID | <u>Author_ID</u> |
| PCM (Reviewer) | Author Phone | Email | Name | Author_Initials |
| Review | Paper No | Phone | Email | Author_Name |
| Paper | Paper Title | Paper | Phone | Author_Email |
| Manuscript | Decision | Paper No | Paper | Author_Phone |
| | Topic | Paper Title | Number | Paper |
| | PCM Name | Decision | Title | <u>Paper_No</u> |
| | PCM Email | Topic | Topic | Paper_Title |
| | PCM Phone | PCM | Authors | Topic_ID |
| | PCM's Topics | Name | PCM | Author_ID1 |
| | Relevance | Email | ID | Author_ID2 |
| | Originality | Topics | Name | PCM |
| | Technical Merit | Phone | Email | <u>PCM_ID</u> |
| | Overall Mark | Review | Phone | PCM_Initials |
| | Page No | Reviewer's Name | Topic#1 | PCM_Name |
| | Copyright | Relevance | Topic#2 | PCM_Email |
| | Received | Originality | Topic#3 | PCM_Phone |
| | Length | Technical Merit | Topic#4 | Topic_ID1 |
| | Format | Overall Mark | Review | Topic_ID2 |
| | | Paper | ID | Topic_ID3 |
| | | Paper No | Paper No | Topic_ID4 |
| | | Title | Relevance | Review |
| | | Topic | Originality | PCM_ID |
| | | Author | Technical Merit | Paper_No |
| | | Email | Overall Mark | Relevance |
| | | Phone | Acceptance | Originality |
| | | Decision | Paper No | Technical_Merit |
| | | Manuscript | Decision (Y/N) | Overall_Mark |
| | | Page No | Page No | Acceptance |
| | | Copyright | Topics | Paper_No |
| | | Received | Topic List | Decision |
| | | Length | Manuscript Detail | Page_No |
| | | Format | Page No | Topics |
| | | | Copyright OK | <u>Topic_ID</u> |
| | | | Received OK | Topic |
| | | | Format OK | Manuscript |
| | | | | Paper_No |
| | | | | Page_No |
| | | | | Copyright |
| | | | | Received |
| | | | | Length |
| | | | | Format |

Normalised Data – Boyce-Codd Normal Form

Table: Author

| <u>Author_ID</u> | Author_Initials | Author_Name | Email | Phone |
|------------------|-----------------|-------------|-------|-------|
| CHAR | CHAR | CHAR | CHAR | CHAR |

Table: Paper

| <u>Paper_No</u> | Paper_Title | Topic_ID | Author_ID1 | Author_ID2 |
|-----------------|-------------|----------|------------|------------|
| CHAR | VARCHAR | CHAR | CHAR | CHAR |

Table: PCM

| <u>PCM_ID</u> | PCM_Initials | PCM_Name | PCM_Email | PCM_Phone | Topic_ID 1 | Topic_ID 2 | Topic_ID 3 | Topic_ID 4 |
|---------------|--------------|----------|-----------|-----------|------------|------------|------------|------------|
| CHAR | CHAR | CHAR | CHAR | CHAR | CHAR | CHAR | CHAR | CHAR |

Table: Review

| <u>PCM_ID</u> | <u>Paper_No</u> | Relevance | Originality | Technical_Merit | Overall_Mark |
|---------------|-----------------|-----------|-------------|-----------------|--------------|
| CHAR | CHAR | CHAR | CHAR | CHAR | CHAR |

Table: Acceptance

| <u>Paper_No</u> | Decision | <u>Page_No</u> |
|-----------------|----------|----------------|
| CHAR | BOOL | CHAR |

Table: Topics

| <u>Topic_ID</u> | Topic |
|-----------------|-------|
| CHAR | CHAR |

Table: Manuscript

| <u>Paper_No</u> | <u>Page_No</u> | Copyright | Received | Length | Format |
|-----------------|----------------|-----------|----------|--------|--------|
| INT | CHAR | BOOL | BOOL | BOOL | BOOL |

N.B. According to Oracle® Reference Database (2012),

“Because SQL has no data type equivalent to `BOOLEAN`, you cannot:

- Assign a `BOOLEAN` value to a database table column
- Select or fetch the value of a database table column into a `BOOLEAN` variable
- Use a `BOOLEAN` value in a SQL statement, SQL function, or PL/SQL function invoked from a SQL statement”

To this end, `CHAR (1) CHECK (xxx IN ('Y', 'N')) NOT NULL`, will be used instead to have the same effect as a `BOOLEAN` value.

Task 3: Final Database Design

SQL Code & Oracle Table Screen Shots

Table: Author

```
CREATE TABLE Author
(Author_ID CHAR (4),
Author_Initials CHAR (2),
Author_Name CHAR (20) NOT NULL,
Author_Email CHAR (40) NOT NULL,
Author_Phone CHAR (15) NOT NULL,
PRIMARY KEY (Author_ID));
```

The screenshot displays the Oracle Application Express interface. At the top, it shows 'ORACLE Application Express' and 'Workspace: S12763849 (Logout)'. The navigation bar includes 'Home', 'Application Builder', 'SQL Workshop', 'Team Development', and 'Administration'. The main area is titled 'AUTHOR' and contains a 'Create' button. Below the title, there are tabs for 'Table', 'Data', 'Indexes', 'Model', 'Constraints', 'Grants', 'Statistics', 'UI Defaults', 'Triggers', 'Dependencies', and 'SQL'. The 'SQL' tab is active, showing the following SQL code:

```
CREATE TABLE "AUTHOR"
(
  "AUTHOR_ID" CHAR(4),
  "AUTHOR_INITIALS" CHAR(2),
  "AUTHOR_NAME" CHAR(20) NOT NULL ENABLE,
  "AUTHOR_EMAIL" CHAR(40) NOT NULL ENABLE,
  "AUTHOR_PHONE" CHAR(15) NOT NULL ENABLE,
  PRIMARY KEY ("AUTHOR_ID") ENABLE
)
```

The interface also shows a list of tables on the left, including ACCEPTANCE, AUTHOR, HTMLDB_PLAN_TABLE, MANUSCRIPT, PAPER, PCM, REVIEW, and TOPICS. The footer of the screenshot displays 'Workspace: S12763849 User: S12763849' and 'Application Express 4.1.1.00.23 Language: en | Copyright © 1999, 2012, Oracle. All rights reserved.'

Figure 2: Author Table SQL Screen Shot

Home Application Builder SQL Workshop Team Development Administration

Home > SQL Workshop > Object Browser Schema S12763849

Tables

AUTHOR Create

Table Data Indexes Model Constraints Grants Statistics UI Defaults Triggers Dependencies SQL

Add Column Modify Column Rename Column Drop Column Rename Copy Drop Truncate Create Lookup Table

| Column Name | Data Type | Nullable | Default | Primary Key |
|-----------------|-----------|----------|---------|-------------|
| AUTHOR_ID | CHAR(4) | No | - | 1 |
| AUTHOR_INITIALS | CHAR(2) | Yes | - | - |
| AUTHOR_NAME | CHAR(20) | No | - | - |
| AUTHOR_EMAIL | CHAR(40) | No | - | - |
| AUTHOR_PHONE | CHAR(15) | No | - | - |
| | | | | 1 - 5 |

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Application Express 4.1.1.00.23

Figure 3: Author Table Screen Shot

Home Application Builder SQL Workshop Team Development Administration

Home > SQL Workshop > Object Browser Schema S12763849

Tables

AUTHOR Create

Table Data Indexes Model Constraints Grants Statistics UI Defaults Triggers Dependencies SQL

Query Count Rows Insert Row

| EDIT | AUTHOR_ID | AUTHOR_INITIALS | AUTHOR_NAME | AUTHOR_EMAIL | AUTHOR_PHONE |
|-------------------------------------|-----------|-----------------|-------------|-------------------------|-------------------|
| <input checked="" type="checkbox"/> | 101 | M | Arthur | malcolm@ic.ac.uk | +441814329478 |
| <input checked="" type="checkbox"/> | 102 | TG | Fish | fish@cul.unige.ch | +35434285624 |
| <input checked="" type="checkbox"/> | 103 | H | Pang | pang@iss@singapore | +884782780228 |
| <input checked="" type="checkbox"/> | 104 | I | Chen | Chen@iss@singapore | +884782780228 |
| <input checked="" type="checkbox"/> | 105 | J | Sung | sung@ee.kyungpook.korea | +21316372848 |
| <input checked="" type="checkbox"/> | 106 | P | Jong | jong@ee.kyungpook.korea | +21316372848 |
| <input checked="" type="checkbox"/> | 107 | R | Zicari | rob@gjp.france | +11468946892 |
| <input checked="" type="checkbox"/> | 108 | F | Sadri | frank@concordia.can | +6648924829782 |
| <input checked="" type="checkbox"/> | 109 | J | Han | han@cs.sfu.ca | +6648924689282 |
| | | | | | row(s) 1 - 9 of 9 |

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Application Express 4.1.1.00.23

Figure 4: Populated Author Table Screen Shot

Table: Topics

```
CREATE TABLE Topics
(Topic_ID CHAR (3) NOT NULL,
Topic CHAR (20) NOT NULL,
PRIMARY KEY (Topic_ID));
```

Oracle Application Express interface showing the SQL Workshop for the TOPICS table. The SQL code is displayed in the main editor area.

```
CREATE TABLE "TOPICS"
(
  "TOPIC_ID" CHAR(3) NOT NULL ENABLE,
  "TOPIC" CHAR(20) NOT NULL ENABLE,
  PRIMARY KEY ("TOPIC_ID") ENABLE
)
```

Figure 5: Topics Table SQL Screen Shot

Oracle Application Express interface showing the column details for the TOPICS table. A table displays the column names, data types, nullability, defaults, and primary key status.

| Column Name | Data Type | Nullable | Default | Primary Key |
|-------------|-----------|----------|---------|-------------|
| TOPIC_ID | CHAR(3) | No | - | 1 |
| TOPIC | CHAR(20) | No | - | - |

Figure 6: Topics Table Screen Shot

Home Application Builder SQL Workshop Team Development Administration

Home SQL Workshop Object Browser Schema S12763849 Help

Tables

ACCEPTANCE
AUTHOR
HTMLDB_PLAN_TABLE
MANUSCRIPT
PAPER
PCM
REVIEW
TOPICS

TOPICS Create

Table Data Indexes Model Constraints Grants Statistics UI Defaults Triggers Dependencies SQL

Query Count Rows Insert Row

| EDIT | TOPIC_ID | TOPIC |
|-------------------------------------|----------|------------------|
| <input checked="" type="checkbox"/> | DBS | Database Systems |
| <input checked="" type="checkbox"/> | Lan | Languages |
| <input checked="" type="checkbox"/> | AI | Artificial Intel |
| <input checked="" type="checkbox"/> | Ind | Indexes |
| <input checked="" type="checkbox"/> | Per | Performance |
| <input checked="" type="checkbox"/> | Sys | Systems |

row(s) 1 - 6 of 6

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Application Express 4.1.1.00.23

Workspace: S12763849 User: S12763849 Language: en | Copyright © 1999, 2012, Oracle. All rights reserved.

Figure 7: Populated Topics Table Screen Shot

Table: Paper

```
CREATE TABLE Paper
(Paper_No INTEGER,
Paper_Title VARCHAR (1000) NOT NULL,
Topic_ID CHAR (3) NOT NULL,
Author_ID1 CHAR (4) NOT NULL,
Author_ID2 CHAR (4),
PRIMARY KEY (Paper_No),
FOREIGN KEY (Topic_ID) REFERENCES Topics (Topic_ID));
```

The screenshot displays the Oracle Application Express interface. At the top, the workspace is identified as 'S12763849'. The navigation bar includes 'Home', 'Application Builder', 'SQL Workshop', 'Team Development', and 'Administration'. The breadcrumb trail shows 'Home > SQL Workshop > Object Browser'. The main area is titled 'PAPER' and contains a 'Create' button. Below the title, there are tabs for 'Table', 'Data', 'Indexes', 'Model', 'Constraints', 'Grants', 'Statistics', 'UI Defaults', 'Triggers', 'Dependencies', and 'SQL'. The 'SQL' tab is active, showing the following SQL code:

```
CREATE TABLE "PAPER"
(
  "PAPER_NO" NUMBER(*,0),
  "PAPER_TITLE" VARCHAR2(1000) NOT NULL ENABLE,
  "TOPIC_ID" CHAR(3) NOT NULL ENABLE,
  "AUTHOR_ID1" CHAR(4) NOT NULL ENABLE,
  "AUTHOR_ID2" CHAR(4),
  PRIMARY KEY ("PAPER_NO") ENABLE
)
/
ALTER TABLE "PAPER" ADD FOREIGN KEY ("TOPIC_ID")
REFERENCES "TOPICS" ("TOPIC_ID") ENABLE
/
```

At the bottom of the interface, the workspace and user information are shown as 'Workspace: S12763849 User: S12763849', and the language is set to 'en'. The footer of the interface includes 'Application Express 4.1.1.00.23' and 'Language: en | Copyright © 1999, 2012, Oracle. All rights reserved.'

Figure 8: Paper Table SQL Screen Shot

Home Application Builder SQL Workshop Team Development Administration

Home > SQL Workshop > Object Browser Schema S12763849

Tables

ACCEPTANCE
AUTHOR
HTMLDB_PLAN_TABLE
MANUSCRIPT
PAPER
PCM
REVIEW
TOPICS

PAPER Create

Table Data Indexes Model Constraints Grants Statistics UI Defaults Triggers Dependencies SQL

Add Column Modify Column Rename Column Drop Column Rename Copy Drop Truncate Create Lookup Table

| Column Name | Data Type | Nullable | Default | Primary Key |
|-------------|----------------|----------|---------|-------------|
| PAPER_NO | NUMBER | No | - | 1 |
| PAPER_TITLE | VARCHAR2(1000) | No | - | - |
| TOPIC_ID | CHAR(3) | No | - | - |
| AUTHOR_ID1 | CHAR(4) | No | - | - |
| AUTHOR_ID2 | CHAR(4) | Yes | - | - |
| | | | | 1 - 5 |

Download

Application Express 4.1.1.00.23
Workspace: S12763849 User: S12763849 Language: en | Copyright © 1999, 2012, Oracle. All rights reserved.

Figure 9: Paper Table Screen Shot

ORACLE Application Express Workspace: S12763849 (Logout)

Home Application Builder SQL Workshop Team Development Administration

Home > SQL Workshop > Object Browser Schema S12763849

Tables

ACCEPTANCE
AUTHOR
HTMLDB_PLAN_TABLE
MANUSCRIPT
PAPER
PCM
REVIEW
TOPICS

PAPER Create

Table Data Indexes Model Constraints Grants Statistics UI Defaults Triggers Dependencies SQL

Query Count Rows Insert Row

| EDIT | PAPER_NO | PAPER_TITLE | TOPIC_ID | AUTHOR_ID1 | AUTHOR_ID2 |
|--------------------------|----------|--|----------|------------|-------------------|
| <input type="checkbox"/> | 1 | The Object-Oriented Database Manifesto | DBS | 101 | - |
| <input type="checkbox"/> | 2 | The Relational Model of Data. | DBS | 102 | - |
| <input type="checkbox"/> | 3 | Query processing in OODB | Ind | 103 | 104 |
| <input type="checkbox"/> | 4 | Performance of Object-Oriented Database Systems. | Per | 105 | 106 |
| <input type="checkbox"/> | 5 | Relational completeness of database sublanguages | DBS | 102 | - |
| <input type="checkbox"/> | 6 | Modelling uncertainty. | AI | 108 | - |
| <input type="checkbox"/> | 7 | A framework for schema updates in an Object-Oriented Database System | DBS | 107 | - |
| <input type="checkbox"/> | 8 | Constraint-based reasoning. | AI | 109 | - |
| <input type="checkbox"/> | 9 | Relational database: a practical foundation for productivity | DBS | 102 | - |
| | | | | | row(s) 1 - 9 of 9 |

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Application Express 4.1.1.00.23
Workspace: S12763849 User: S12763849 Language: en | Copyright © 1999, 2012, Oracle. All rights reserved.

Figure 10: Populated Paper Table Screen Shot

Table: PCM

```
CREATE TABLE PCM
(PCM_ID CHAR (4) NOT NULL,
PCM_Initials CHAR (2) NOT NULL,
PCM_Name CHAR (20) NOT NULL,
PCM_Email CHAR (40) NOT NULL,
PCM_Phone CHAR (40) NOT NULL,
Topic_ID1 CHAR (3) NOT NULL,
Topic_ID2 CHAR (3),
Topic_ID3 CHAR (3),
Topic_ID4 CHAR (3),
PRIMARY KEY (PCM_ID),
FOREIGN KEY (Topic_ID1) REFERENCES Topics (Topic_ID),
FOREIGN KEY (Topic_ID2) REFERENCES Topics (Topic_ID),
FOREIGN KEY (Topic_ID3) REFERENCES Topics (Topic_ID),
FOREIGN KEY (Topic_ID4) REFERENCES Topics (Topic_ID));
```

The screenshot displays the Oracle Application Express interface. At the top, the navigation bar includes 'Home', 'Application Builder', 'SQL Workshop', 'Team Development', and 'Administration'. The current workspace is identified as 'S12763849'. The main area shows the 'Object Browser' with a list of tables including 'ACCEPTANCE', 'AUTHOR', 'HTMLDB_PLAN_TABLE', 'MANUSCRIPT', 'PAPER', 'PCM', 'REVIEW', and 'TOPICS'. The 'PCM' table is selected, and the 'SQL' tab is active, showing the following SQL script:

```
CREATE TABLE "PCM"
(
  "PCM_ID" CHAR(4) NOT NULL ENABLE,
  "PCM_INITIALS" CHAR(2) NOT NULL ENABLE,
  "PCM_NAME" CHAR(20) NOT NULL ENABLE,
  "PCM_EMAIL" CHAR(40) NOT NULL ENABLE,
  "PCM_PHONE" CHAR(40) NOT NULL ENABLE,
  "TOPIC_ID1" CHAR(3) NOT NULL ENABLE,
  "TOPIC_ID2" CHAR(3),
  "TOPIC_ID3" CHAR(3),
  "TOPIC_ID4" CHAR(3),
  PRIMARY KEY ("PCM_ID") ENABLE
)
/
ALTER TABLE "PCM" ADD FOREIGN KEY ("TOPIC_ID1")
REFERENCES "TOPICS" ("TOPIC_ID") ENABLE
/
ALTER TABLE "PCM" ADD FOREIGN KEY ("TOPIC_ID2")
REFERENCES "TOPICS" ("TOPIC_ID") ENABLE
/
ALTER TABLE "PCM" ADD FOREIGN KEY ("TOPIC_ID3")
REFERENCES "TOPICS" ("TOPIC_ID") ENABLE
/
```

The footer of the interface shows 'Workspace: S12763849 User: S12763849' and 'Application Express 4.1.1.00.23 Language: en | Copyright © 1999, 2012, Oracle. All rights reserved.'

Figure 11: PCM Table SQL Screen Shot

Home Application Builder SQL Workshop Team Development Administration

Home SQL Workshop Object Browser Schema S12763849

Tables

PCM

Table Data Indexes Model Constraints Grants Statistics UI Defaults Triggers Dependencies SQL

Add Column Modify Column Rename Column Drop Column Rename Copy Drop Truncate Create Lookup Table

| Column Name | Data Type | Nullable | Default | Primary Key |
|--------------|-----------|----------|---------|-------------|
| PCM_ID | CHAR(4) | No | - | 1 |
| PCM_INITIALS | CHAR(2) | No | - | - |
| PCM_NAME | CHAR(20) | No | - | - |
| PCM_EMAIL | CHAR(40) | No | - | - |
| PCM_PHONE | CHAR(40) | No | - | - |
| TOPIC_ID1 | CHAR(3) | No | - | - |
| TOPIC_ID2 | CHAR(3) | Yes | - | - |
| TOPIC_ID3 | CHAR(3) | Yes | - | - |
| TOPIC_ID4 | CHAR(3) | Yes | - | - |

Download

Application Express 4.1.1.00.23

Workspace: S12763849 User: S12763849 Language: en | Copyright © 1999, 2012, Oracle. All rights reserved.

Figure 12: PCM Table Screen Shot

ORACLE Application Express

Workspace: S12763849 (Logout)

Home Application Builder SQL Workshop Team Development Administration

Home SQL Workshop Object Browser Schema S12763849

Tables

PCM

Table Data Indexes Model Constraints Grants Statistics UI Defaults Triggers Dependencies SQL

Query Count Rows Insert Row

| EDIT | PCM_ID | PCM_INITIALS | PCM_NAME | PCM_EMAIL | PCM_PHONE | TOPIC_ID1 | TOPIC_ID2 | TOPIC_ID3 | TOPIC_ID4 |
|--------------------------|--------|--------------|-------------|-------------------------------|-----------------|-----------|-----------|-----------|-----------|
| <input type="checkbox"/> | P05 | B | Dandy | brian@venus.sees.bangor.ac.uk | +42484672394 | DBS | Sys | - | - |
| <input type="checkbox"/> | P06 | W | Edmondson | ale@uce.ac.uk | +44213313214 | AI | DBS | Sys | - |
| <input type="checkbox"/> | P07 | L | Kwiatkowska | kwi@forwiss.uni-erlangen.de | +55324484703711 | AI | Lan | DBS | - |
| <input type="checkbox"/> | P08 | U | Dayal | ume@src.dec.com | +55324484703711 | Ind | Sys | AI | DBS |
| <input type="checkbox"/> | P09 | M | Wallace | mark@imperial.ac.uk | +447148942892 | Per | DBS | - | - |
| <input type="checkbox"/> | P10 | JC | Freitag | johann@ecrc.de | +4989926990 | Per | Ind | DBS | - |
| <input type="checkbox"/> | P01 | T | Brayshaw | tab@cs.bham.ac.uk | +44214144778 | DBS | Lan | AI | - |
| <input type="checkbox"/> | P02 | S | Beale | sxb@daimi.aau.dk | +2145995353214 | Lan | AI | DBS | - |
| <input type="checkbox"/> | P03 | L | Veille | laurent.acre.de | +4989926990 | DBS | Ind | Per | - |
| <input type="checkbox"/> | P04 | J | Cunningham | joan@ai.univie.ac.at | +876352764763 | DBS | AI | Sys | - |

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Application Express 4.1.1.00.23

Workspace: S12763849 User: S12763849 Language: en | Copyright © 1999, 2012, Oracle. All rights reserved.

Figure 13: Populated PCM Table Screen Shot

Table: Manuscript

```
CREATE TABLE Manuscript
(Paper_No INTEGER NOT NULL,
Page_No CHAR (2) NOT NULL,
Copyright CHAR (1) CHECK (Copyright IN ('Y','N')) NOT NULL,
Received CHAR (1) CHECK (Received IN ('Y','N')) NOT NULL,
Length CHAR (1) CHECK (Length IN ('Y','N')) NOT NULL,
Format CHAR (1) CHECK (Format IN ('Y','N')) NOT NULL,
FOREIGN KEY (Paper_No) REFERENCES Paper (Paper_No));
```

The screenshot shows the Oracle Application Express interface. At the top, there's a navigation bar with 'Home', 'Application Builder', 'SQL Workshop', 'Team Development', and 'Administration'. Below that, a breadcrumb trail shows 'Home > SQL Workshop > Object Browser'. The main area is titled 'MANUSCRIPT' and has a 'Create' button. On the left, there's a 'Tables' list with 'MANUSCRIPT' selected. The main pane displays the following SQL code:

```
CREATE TABLE "MANUSCRIPT"
(
  "PAPER_NO" NUMBER(*,0) NOT NULL ENABLE,
  "PAGE_NO" CHAR(2) NOT NULL ENABLE,
  "COPYRIGHT" CHAR(1) NOT NULL ENABLE,
  "RECEIVED" CHAR(1) NOT NULL ENABLE,
  "LENGTH" CHAR(1) NOT NULL ENABLE,
  "FORMAT" CHAR(1) NOT NULL ENABLE,
  CHECK (Copyright IN ('Y','N')) ENABLE,
  CHECK (Received IN ('Y','N')) ENABLE,
  CHECK (Length IN ('Y','N')) ENABLE,
  CHECK (Format IN ('Y','N')) ENABLE
)
/
ALTER TABLE "MANUSCRIPT" ADD FOREIGN KEY ("PAPER_NO")
REFERENCES "PAPER" ("PAPER_NO") ENABLE
/
```

At the bottom of the interface, it says 'Application Express 4.1.1.00.23' and 'Workspace: S12763849 User: S12763849'.

Figure 14: Manuscript Table SQL Screen Shot

Home Application Builder SQL Workshop Team Development Administration

Home > SQL Workshop > Object Browser Schema S12763849

Tables

MANUSCRIPT Create

Table Data Indexes Model Constraints Grants Statistics UI Defaults Triggers Dependencies SQL

Add Column | Modify Column | Rename Column | Drop Column | Rename | Copy | Drop | Truncate | Create Lookup Table

| Column Name | Data Type | Nullable | Default | Primary Key |
|-------------|-----------|----------|---------|-------------|
| PAPER_NO | NUMBER | No | - | - |
| PAGE_NO | CHAR(2) | No | - | - |
| COPYRIGHT | CHAR(1) | No | - | - |
| RECEIVED | CHAR(1) | No | - | - |
| LENGTH | CHAR(1) | No | - | - |
| FORMAT | CHAR(1) | No | - | - |
| | | | | 1 - 6 |

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Application Express 4.1.1.00.23

Workspace: S12763849 User: S12763849 Language: en | Copyright © 1999, 2012, Oracle. All rights reserved.

Figure 15: Manuscript Table Screen Shot

ORACLE Application Express

Workspace: S12763849 (Logout)

Home Application Builder SQL Workshop Team Development Administration

Home > SQL Workshop > Object Browser Schema S12763849

Tables

MANUSCRIPT Create

Table Data Indexes Model Constraints Grants Statistics UI Defaults Triggers Dependencies SQL

Query | Count Rows | Insert Row

| EDIT | PAPER_NO | PAGE_NO | COPYRIGHT | RECEIVED | LENGTH | FORMAT |
|--------------------------|----------|---------|-----------|----------|--------|-------------------|
| <input type="checkbox"/> | 1 | 25 | Y | Y | Y | Y |
| <input type="checkbox"/> | 2 | 22 | Y | Y | Y | Y |
| <input type="checkbox"/> | 3 | 18 | Y | Y | Y | Y |
| <input type="checkbox"/> | 4 | 31 | Y | Y | Y | Y |
| <input type="checkbox"/> | 5 | 22 | Y | Y | Y | Y |
| <input type="checkbox"/> | 6 | 32 | Y | Y | Y | Y |
| <input type="checkbox"/> | 7 | 27 | Y | Y | Y | Y |
| <input type="checkbox"/> | 8 | 43 | Y | Y | Y | Y |
| <input type="checkbox"/> | 9 | 36 | Y | Y | Y | Y |
| | | | | | | row(s) 1 - 9 of 9 |

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Workspace: S12763849 User: S12763849 Language: en | Copyright © 1999, 2012, Oracle. All rights reserved.

Figure 16: Populated Manuscript Table Screen Shot

Table: Review

```
CREATE TABLE Review
(PCM_ID CHAR (4) NOT NULL,
Paper_No INTEGER NOT NULL,
Relevance CHAR (2) NOT NULL,
Originality CHAR (2) NOT NULL,
Technical_Merit CHAR (2) NOT NULL,
Overall_Mark CHAR (2) NOT NULL,
FOREIGN KEY (PCM_ID) REFERENCES PCM (PCM_ID),
FOREIGN KEY (Paper_No) REFERENCES Paper (Paper_No));
```

The screenshot shows the Oracle Application Express interface. At the top, it says "ORACLE Application Express" and "Workspace: S12763849 (Logout)". Below that is a navigation bar with "Home", "Application Builder", "SQL Workshop", "Team Development", and "Administration". The main area is titled "REVIEW" and contains a "Create" button. On the left, there is a "Tables" list with "REVIEW" selected. The main pane displays the following SQL code:

```
CREATE TABLE "REVIEW"
(
  "PCM_ID" CHAR(4) NOT NULL ENABLE,
  "PAPER_NO" NUMBER(*,0) NOT NULL ENABLE,
  "RELEVANCE" CHAR(2) NOT NULL ENABLE,
  "ORIGINALITY" CHAR(2) NOT NULL ENABLE,
  "TECHNICAL_MERIT" CHAR(2) NOT NULL ENABLE,
  "OVERALL_MARK" CHAR(2) NOT NULL ENABLE
)
/
ALTER TABLE "REVIEW" ADD FOREIGN KEY ("PCM_ID")
REFERENCES "PCM" ("PCM_ID") ENABLE
/
ALTER TABLE "REVIEW" ADD FOREIGN KEY ("PAPER_NO")
REFERENCES "PAPER" ("PAPER_NO") ENABLE
/
```

At the bottom of the interface, it says "Workspace: S12763849 User: S12763849" and "Application Express 4.1.1.00.23 Language: en | Copyright © 1999, 2012, Oracle. All rights reserved."

Figure 17: Review Table SQL Screen Shot

Home Application Builder SQL Workshop Team Development Administration

Home > SQL Workshop > Object Browser Schema S12763849

Tables

ACCEPTANCE
AUTHOR
HTMLDB_PLAN_TABLE
MANUSCRIPT
PAPER
PCM
REVIEW
TOPICS

REVIEW Create

Table Data Indexes Model Constraints Grants Statistics UI Defaults Triggers Dependencies SQL

Add Column Modify Column Rename Column Drop Column Rename Copy Drop Truncate Create Lookup Table

| Column Name | Data Type | Nullable | Default | Primary Key |
|-----------------|-----------|----------|---------|-------------|
| PCM_ID | CHAR(4) | No | - | - |
| PAPER_NO | NUMBER | No | - | - |
| RELEVANCE | CHAR(2) | No | - | - |
| ORIGINALITY | CHAR(2) | No | - | - |
| TECHNICAL_MERIT | CHAR(2) | No | - | - |
| OVERALL_MARK | CHAR(2) | No | - | - |

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Application Express 4.1.1.00.23
Workspace: S12763849 User: S12763849 Language: en | Copyright © 1999, 2012, Oracle. All rights reserved.

Figure 18: Review Table Screen Shot

ORACLE Application Express Workspace: S12763849 (Logout)

Home Application Builder SQL Workshop Team Development Administration

Home > SQL Workshop > Object Browser Schema S12763849

Tables

ACCEPTANCE
AUTHOR
HTMLDB_PLAN_TABLE
MANUSCRIPT
PAPER
PCM
REVIEW
TOPICS

REVIEW Create

Table Data Indexes Model Constraints Grants Statistics UI Defaults Triggers Dependencies SQL

Query Count Rows Insert Row

| EDIT | PCM_ID | PAPER_NO | RELEVANCE | ORIGINALITY | TECHNICAL_MERIT | OVERALL_MARK |
|--------------------------|--------|----------|-----------|-------------|-----------------|--------------|
| <input type="checkbox"/> | P01 | 1 | 9 | 5 | 8 | 9 |
| <input type="checkbox"/> | P02 | 1 | 9 | 5 | 8 | 8 |
| <input type="checkbox"/> | P04 | 1 | 10 | 5 | 7 | 9 |
| <input type="checkbox"/> | P02 | 2 | 9 | 8 | 8 | 9 |
| <input type="checkbox"/> | P05 | 2 | 9 | 9 | 8 | 9 |
| <input type="checkbox"/> | P07 | 2 | 9 | 8 | 9 | 9 |
| <input type="checkbox"/> | P10 | 3 | 6 | 3 | 5 | 4 |
| <input type="checkbox"/> | P08 | 3 | 6 | 4 | 4 | 4 |
| <input type="checkbox"/> | P03 | 3 | 6 | 2 | 3 | 3 |
| <input type="checkbox"/> | P09 | 4 | 7 | 8 | 7 | 8 |
| <input type="checkbox"/> | P10 | 4 | 8 | 7 | 8 | 8 |
| <input type="checkbox"/> | P06 | 5 | 7 | 8 | 7 | 8 |
| <input type="checkbox"/> | P02 | 5 | 8 | 8 | 9 | 8 |
| <input type="checkbox"/> | P09 | 5 | 8 | 9 | 7 | 8 |
| <input type="checkbox"/> | P07 | 6 | 6 | 6 | 7 | 6 |

row(s) 1 - 15 of 22

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Application Express 4.1.1.00.23
Workspace: S12763849 User: S12763849 Language: en | Copyright © 1999, 2012, Oracle. All rights reserved.

Figure 19: Populated Review Table Screen Shot

Table: Acceptance

```
CREATE TABLE Acceptance
(Paper_No INTEGER NOT NULL,
Decision CHAR (1) CHECK (Decision IN ('Y','N')),
Page_No CHAR (2) NOT NULL,
FOREIGN KEY (Paper_No) REFERENCES Paper (Paper_No));
```

The screenshot displays the Oracle Application Express interface. At the top, the navigation bar includes 'Home', 'Application Builder', 'SQL Workshop', 'Team Development', and 'Administration'. The current workspace is 'S12763849'. The main area shows the 'ACCEPTANCE' table in the 'SQL' tab. The SQL editor contains the following code:

```
CREATE TABLE "ACCEPTANCE"
(
  "PAPER_NO" NUMBER(*,0) NOT NULL ENABLE,
  "DECISION" CHAR(1),
  "PAGE_NO" CHAR(2) NOT NULL ENABLE,
  CHECK (Decision IN ('Y','N')) ENABLE
)
/
ALTER TABLE "ACCEPTANCE" ADD FOREIGN KEY ("PAPER_NO")
REFERENCES "PAPER" ("PAPER_NO") ENABLE
/
```

The interface also shows a list of tables on the left, including 'ACCEPTANCE', 'AUTHOR', 'HTMLDB_PLAN_TABLE', 'MANUSCRIPT', 'PAPER', 'PCM', 'REVIEW', and 'TOPICS'. The bottom status bar indicates 'Workspace: S12763849 User: S12763849' and 'Application Express 4.1.1.00.23'.

Figure 20: Acceptance Table SQL Screen Shot

ORACLE Application Express Workspace: S12763849 (Logout)

Home Application Builder SQL Workshop Team Development Administration

Home > SQL Workshop > Object Browser Schema S12763849 Help

Tables

ACCEPTANCE Create

Table Data Indexes Model Constraints Grants Statistics UI Defaults Triggers Dependencies SQL

[Add Column](#) [Modify Column](#) [Rename Column](#) [Drop Column](#) [Rename](#) [Copy](#) [Drop](#) [Truncate](#) [Create Lookup Table](#)

| Column Name | Data Type | Nullable | Default | Primary Key |
|-------------|-----------|----------|---------|-------------|
| PAPER_NO | NUMBER | No | - | - |
| DECISION | CHAR(1) | Yes | - | - |
| PAGE_NO | CHAR(2) | No | - | - |
| | | | | 1-3 |

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Application Express 4.1.1.00.23

Workspace: S12763849 User: S12763849 Language: en | Copyright © 1999, 2012, Oracle. All rights reserved.

Figure 21: Acceptance Table Screen Shot

ORACLE Application Express Workspace: S12763849 (Logout)

Home Application Builder SQL Workshop Team Development Administration

Home > SQL Workshop > Object Browser Schema S12763849 Help

Tables

ACCEPTANCE Create

Table Data Indexes Model Constraints Grants Statistics UI Defaults Triggers Dependencies SQL

[Query](#) [Count Rows](#) [Insert Row](#)

| EDIT | PAPER_NO | DECISION | PAGE_NO |
|--------------------------|----------|----------|-------------------|
| <input type="checkbox"/> | 1 | Y | 25 |
| <input type="checkbox"/> | 2 | Y | 22 |
| <input type="checkbox"/> | 3 | N | 18 |
| <input type="checkbox"/> | 4 | - | 31 |
| <input type="checkbox"/> | 5 | Y | 22 |
| <input type="checkbox"/> | 6 | - | 32 |
| <input type="checkbox"/> | 7 | - | 27 |
| <input type="checkbox"/> | 8 | Y | 43 |
| <input type="checkbox"/> | 9 | N | 36 |
| | | | row(s) 1 - 9 of 9 |

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Application Express 4.1.1.00.23

Workspace: S12763849 User: S12763849 Language: en | Copyright © 1999, 2012, Oracle. All rights reserved.

Figure 22: Populated Acceptance Table Screen Shot

Task 4: SQL Queries

A) Titles of papers written by Fish which have been accepted for the conference

```
SELECT Author_Name, Paper_Title, Decision
FROM Author, Paper, Acceptance
WHERE Author_Name = 'Fish'
AND Decision = 'Y'
AND Paper.Paper_No=Acceptance.Paper_No
AND Paper.Author_ID1=Author.Author_ID
ORDER BY Author_Name;
```

The screenshot shows the Oracle Application Express interface. At the top, it says "ORACLE Application Express" and "Workspace: S12763849 (Logout)". Below this is a navigation bar with "Home", "Application Builder", "SQL Workshop", "Team Development", and "Administration". The "SQL Workshop" tab is active, showing "Home > SQL Workshop > SQL Commands". The "Schema" is set to "S12763849". There are buttons for "Autocommit", "Rows" (set to 50), "Save", and "Run". The SQL query is pasted into the editor:

```
SELECT Author_Name, Paper_Title, Decision
FROM Author, Paper, Acceptance
WHERE Author_Name = 'Fish'
AND Decision = 'Y'
AND Paper.Paper_No=Acceptance.Paper_No
AND Paper.Author_ID1=Author.Author_ID
ORDER BY Author_Name;
```

Below the editor, there are tabs for "Results", "Explain", "Describe", "Saved SQL", and "History". The "Results" tab is selected, showing a table with the following data:

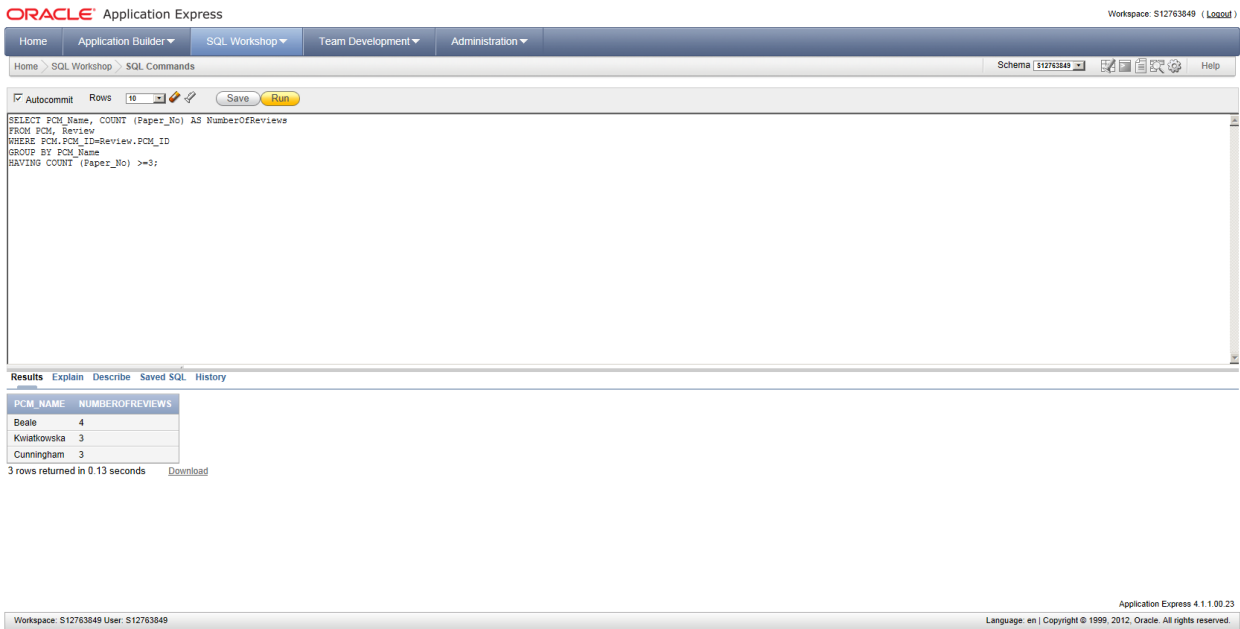
| AUTHOR_NAME | PAPER_TITLE | DECISION |
|-------------|--|----------|
| Fish | The Relational Model of Data | Y |
| Fish | Relational completeness of database sublanguages | Y |

Below the table, it says "2 rows returned in 0.00 seconds" and a "Download" link. At the bottom of the page, it says "Application Express 4.1.1.00.23" and "Workspace: S12763849 User: S12763849 Language: en | Copyright © 1999, 2012, Oracle. All rights reserved."

Figure 23: SQL Query A

B) Members of the program committee who have reviewed three or more papers

```
SELECT PCM_Name, COUNT (Paper_No) AS NumberOfReviews
FROM PCM, Review
WHERE PCM.PCM_ID=Review.PCM_ID
GROUP BY PCM_Name
HAVING COUNT (Paper_No) >=3;
```



The screenshot shows the Oracle Application Express interface. The top navigation bar includes 'Home', 'Application Builder', 'SQL Workshop', 'Team Development', and 'Administration'. The 'SQL Workshop' tab is active, showing a 'SQL Commands' window. The query editor contains the following SQL code:

```
SELECT PCM_Name, COUNT (Paper_No) AS NumberOfReviews
FROM PCM, Review
WHERE PCM.PCM_ID=Review.PCM_ID
GROUP BY PCM_Name
HAVING COUNT (Paper_No) >=3;
```

Below the query editor, the 'Results' tab is active, displaying a table with the following data:

| PCM_NAME | NUMBEROFREVIEWS |
|-------------|-----------------|
| Beale | 4 |
| Kwiatkowska | 3 |
| Cunningham | 3 |

At the bottom of the results area, it states '3 rows returned in 0.13 seconds' and provides a 'Download' link. The footer of the interface shows 'Workspace: S12763849 User: S12763849' and 'Application Express 4.1.1.00.23'.

Figure 24: SQL Query B

C) Email addresses and telephone numbers of the authors of papers rejected by the committee

```
SELECT Author_Name, Author_Email, Author_Phone, Paper.Paper_No,  
Decision  
FROM Author, Paper, Acceptance  
WHERE Decision = 'N'  
AND Paper.Paper_No=Acceptance.Paper_No  
AND Paper.Author_ID1=Author.Author_ID  
ORDER BY Decision;
```

The screenshot shows the Oracle Application Express interface. At the top, there's a navigation bar with 'Home', 'Application Builder', 'SQL Workshop', 'Team Development', and 'Administration'. Below that, the 'SQL Commands' window is active, displaying the SQL query from the previous block. The 'Autocommit' checkbox is checked, and the 'Rows' limit is set to 50. Below the query editor, the 'Results' tab is selected, showing a table with 2 rows. The table has columns: AUTHOR_NAME, AUTHOR_EMAIL, AUTHOR_PHONE, PAPER_NO, and DECISION. The first row is for 'Pang' with email 'pang@iss@singapore' and phone '+884782780228'. The second row is for 'Fish' with email 'fish@cul.unige.ch' and phone '+35434285624'. At the bottom of the interface, the workspace ID 'S12763849' and user 'S12763849' are visible, along with the Oracle copyright notice.

| AUTHOR_NAME | AUTHOR_EMAIL | AUTHOR_PHONE | PAPER_NO | DECISION |
|-------------|--------------------|---------------|----------|----------|
| Pang | pang@iss@singapore | +884782780228 | 3 | N |
| Fish | fish@cul.unige.ch | +35434285624 | 9 | N |

Figure 25: SQL Query C

D) Titles of papers reviewed by L Kwiatkowska and J Cunningham

```
SELECT DISTINCT Paper_Title, PCM_Name
FROM Paper, Review, PCM
WHERE PCM_Name = 'Kwiatkowska'
OR PCM_Name = 'Cunningham'
AND Review.Paper_No = Paper.Paper_No
AND Review.PCM_ID = PCM.PCM_ID;
```

The screenshot shows the Oracle Application Express interface. At the top, it says "ORACLE Application Express" and "Workspace: S12763849 (Logout)". Below that is a navigation bar with "Home", "Application Builder", "SQL Workshop", "Team Development", and "Administration". The "SQL Workshop" tab is active, showing "Home > SQL Workshop > SQL Commands". The "Schema" dropdown is set to "S12763849".

The SQL editor contains the following query:

```
SELECT DISTINCT Paper_Title, PCM_Name
FROM Paper, Review, PCM
WHERE PCM_Name = 'Kwiatkowska'
OR PCM_Name = 'Cunningham'
AND Review.Paper_No = Paper.Paper_No
AND Review.PCM_ID = PCM.PCM_ID;
```

Below the editor, there are buttons for "Autocommit", "Rows" (set to 50), "Save", and "Run".

The "Results" tab is selected, showing a table with two columns: "PAPER_TITLE" and "PCM_NAME". The table contains 12 rows of data:

| PAPER_TITLE | PCM_NAME |
|--|-------------|
| The Object-Oriented Database Manifesto | Cunningham |
| Relational completeness of database sublanguages | Kwiatkowska |
| Performance of Object-Oriented Database Systems. | Kwiatkowska |
| A framework for schema updates in an Object-Oriented Database System | Kwiatkowska |
| Relational database: a practical foundation for productivity | Kwiatkowska |
| The Object-Oriented Database Manifesto | Kwiatkowska |
| Constraint-based reasoning. | Cunningham |
| Query processing in OODB | Kwiatkowska |
| Modelling uncertainty. | Kwiatkowska |
| Constraint-based reasoning. | Kwiatkowska |
| Relational database: a practical foundation for productivity | Cunningham |
| The Relational Model of Data. | Kwiatkowska |

At the bottom of the results area, it says "12 rows returned in 0.01 seconds" and has a "Download" link.

At the very bottom of the page, it says "Workspace: S12763849 User: S12763849" and "Application Express 4.1.1.00.23 Language: en | Copyright © 1999, 2012, Oracle. All rights reserved."

Figure 26: SQL Query D

E) Names and telephone numbers of all authors and program committee members; in alphabetical order

```
SELECT Author_Name, Author_Phone  
FROM Author  
ORDER BY Author_Name;
```

The screenshot shows the Oracle Application Express interface. The top navigation bar includes 'Home', 'Application Builder', 'SQL Workshop', 'Team Development', and 'Administration'. The current page is 'SQL Workshop > SQL Commands'. The 'Schema' is set to 'S12763849'. The 'Autocommit' checkbox is checked, and the 'Rows' limit is set to 500. The SQL command entered is: `SELECT Author_Name, Author_Phone FROM Author ORDER BY Author_Name;`. The 'Run' button is highlighted. Below the command area, the 'Results' tab is active, displaying a table with 9 rows. The table has two columns: 'AUTHOR_NAME' and 'AUTHOR_PHONE'. The data is as follows:

| AUTHOR_NAME | AUTHOR_PHONE |
|-------------|----------------|
| Arthur | +441814329478 |
| Chen | +884782780228 |
| Fish | +35434285624 |
| Han | +6648924689282 |
| Jong | +21316372848 |
| Pang | +884782780228 |
| Sadri | +6648924829782 |
| Sung | +21316372848 |
| Zicari | +11468946892 |

9 rows returned in 0.00 seconds. [Download](#)

Application Express 4.1.1.00.23
Workspace: S12763849 User: S12763849 Language: en | Copyright © 1999, 2012, Oracle. All rights reserved.

Figure 27: SQL Query E1

```
SELECT PCM_Name, PCM_Phone  
FROM PCM  
ORDER BY PCM_Name;
```

The screenshot shows the Oracle Application Express interface. The top navigation bar includes 'Home', 'Application Builder', 'SQL Workshop', 'Team Development', and 'Administration'. The current page is 'SQL Workshop > SQL Commands'. The 'Schema' is set to 'S12763849'. The 'Autocommit' checkbox is checked, and the 'Rows' limit is set to 10. The SQL command entered is: `SELECT PCM_Name, PCM_Phone FROM PCM ORDER BY PCM_Name;`. The 'Run' button is highlighted. Below the command area, the 'Results' tab is active, displaying a table with 10 rows. The table has two columns: 'PCM_NAME' and 'PCM_PHONE'. The data is as follows:

| PCM_NAME | PCM_PHONE |
|-------------|-----------------|
| Beale | +2145995353214 |
| Brayshaw | +44214144778 |
| Cunningham | +876352764763 |
| Dandy | +42484672394 |
| Dayal | +55324484703711 |
| Edmondson | +44213313214 |
| Freytag | +4989926990 |
| Kwiatkowska | +55324484703711 |
| Veille | +4989926990 |
| Wallace | +447148942892 |

10 rows returned in 0.00 seconds. [Download](#)

Application Express 4.1.1.00.23
Workspace: S12763849 User: S12763849 Language: en | Copyright © 1999, 2012, Oracle. All rights reserved.

Figure 28: SQL Query E2

F) For each paper, the paper number, the decision (Accepted, Rejected or unknown) and the overall mark given by each reviewer (if one exists); ordered by paper number

```
SELECT Paper.Paper_No, Decision, PCM_ID, Overall_Mark
FROM Paper, Review, Acceptance
WHERE Paper.Paper_No=Acceptance.Paper_No
AND Paper.Paper_No=Review.Paper_No
ORDER BY Paper.Paper_No;
```

The screenshot shows the Oracle Application Express interface. At the top, it says 'ORACLE Application Express' and 'Workspace: S12763849 (Logout)'. The navigation bar includes 'Home', 'Application Builder', 'SQL Workshop', 'Team Development', and 'Administration'. The breadcrumb trail is 'Home > SQL Workshop > SQL Commands'. The schema is set to 'S12763849'. The 'Autocommit' checkbox is checked, and the 'Rows' limit is set to 50. The 'Run' button is highlighted in yellow.

The SQL query entered is:

```
SELECT Paper.Paper_No, Decision, PCM_ID, Overall_Mark
FROM Paper, Review, Acceptance
WHERE Paper.Paper_No=Acceptance.Paper_No
AND Paper.Paper_No=Review.Paper_No
ORDER BY Paper.Paper_No;
```

The results are displayed in a table with the following columns: PAPER_NO, DECISION, PCM_ID, and OVERALL_MARK. There are 22 rows of data.

| PAPER_NO | DECISION | PCM_ID | OVERALL_MARK |
|----------|----------|--------|--------------|
| 1 | Y | P01 | 9 |
| 1 | Y | P02 | 8 |
| 1 | Y | P04 | 9 |
| 2 | Y | P02 | 9 |
| 2 | Y | P05 | 9 |
| 2 | Y | P07 | 9 |
| 3 | N | P10 | 4 |
| 3 | N | P08 | 4 |
| 3 | N | P03 | 3 |
| 4 | - | P09 | 8 |
| 4 | - | P10 | 8 |
| 5 | Y | P06 | 8 |
| 5 | Y | P02 | 8 |
| 5 | Y | P09 | 8 |
| 6 | - | P07 | 6 |
| 6 | - | P02 | 6 |
| 8 | Y | P07 | 8 |
| 8 | Y | P01 | 8 |
| 8 | Y | P04 | 8 |
| 9 | N | P04 | 6 |
| 9 | N | P03 | 5 |
| 9 | N | P05 | 6 |

At the bottom of the results area, it says '22 rows returned in 0.00 seconds' and has a 'Download' link. The footer of the page includes 'Application Express 4.1.1.00.23', 'Workspace: S12763849 User: S12763849', and 'Language: en | Copyright © 1999, 2012, Oracle. All rights reserved.'

Figure 29: SQL Query F

G) For each paper list the paper's title, the author name(s) and the page number

```
SELECT Paper_Title, Author_Initials, Author_Name, Page_No
FROM Paper, Author, Manuscript
WHERE Paper.Author_ID1=Author.Author_ID
AND Paper.Paper_No=Manuscript.Paper_No;
```

The screenshot shows the Oracle Application Express interface. At the top, it says 'ORACLE Application Express' and 'Workspace: S12763849 (Logout)'. Below that is a navigation bar with 'Home', 'Application Builder', 'SQL Workshop', 'Team Development', and 'Administration'. The 'SQL Workshop' tab is active, showing 'Home > SQL Workshop > SQL Commands'. The schema is set to 'S12763849'. There are buttons for 'Autocommit', 'Rows' (set to 50), 'Save', and 'Run'. The SQL query is pasted into the editor. Below the editor, there are tabs for 'Results', 'Explain', 'Describe', 'Saved SQL', and 'History'. The 'Results' tab is selected, showing a table with 9 rows. The table has columns: PAPER_TITLE, AUTHOR_INITIALS, AUTHOR_NAME, and PAGE_NO. Below the table, it says '9 rows returned in 0.00 seconds' and a 'Download' link. At the bottom, it says 'Application Express 4.1.1.00.23' and 'Workspace: S12763849 User: S12763849 Language: en | Copyright © 1999, 2012, Oracle. All rights reserved.'

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Figure 30: SQL Query G

References

Lorentz, D. Roeser, M. Oracle®. (2012). *Oracle® Database PL/SQL Language Reference, 11g Release 2 (11.2)*. http://docs.oracle.com/cd/E11882_01/appdev.112/e10472/datatypes.htm. [Accessed on November 8, 2012].