

Ans No 1 (c)

Different tools, techniques and website are used / employed / analyzed in the course conduct time. Here List of them mentioning purpose and significances.

Vertabelo

Purpose: It is an online data modeler that supports SQL Server

Significance: You we can do automation from a logical to a physical data

to Navicat

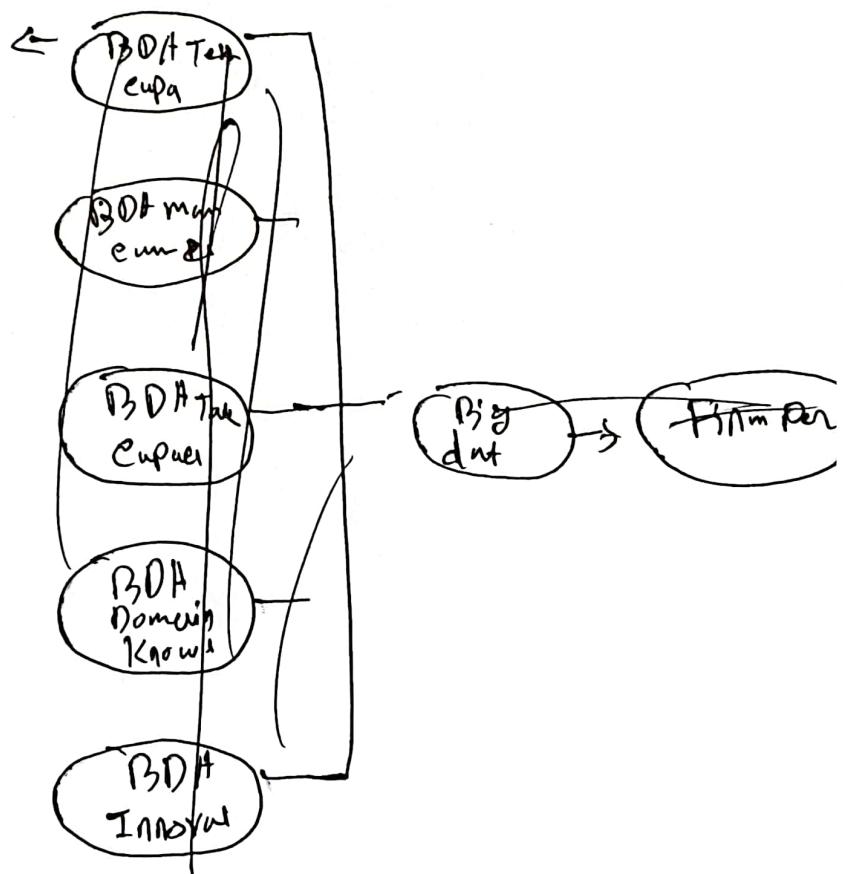
Purpose: The Navicat data modeler is available in desktop version for windows.

Significance: It supports standard data modeling.

ER / Studio Data Architect

Purpose: It is a data architecture and database design tool. It is in use forward and backward engineering.

Significance: Generating DDL scripts.



Batch Answer No 1 (a)

Data is a valuable commodity in this digital area and database is like commercial Bank's vault of secure the Data.

9 Justify the statement comparing functions / operations of Bank vault with database features / function.

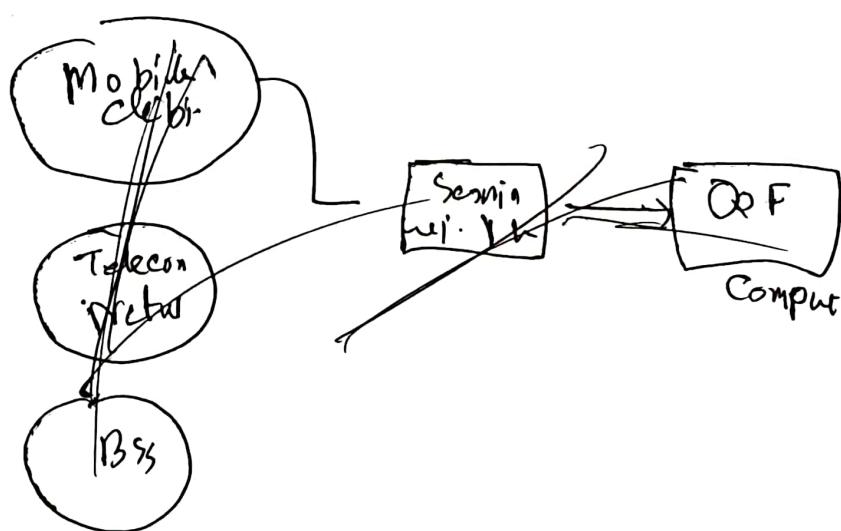
i) Data enables financial service providers to offer personalized service, improve efficiency and ultimately increase profitability. This shift has profound effects on every aspect of banking.

Specially Bank vault.

ii) Leverage the real value of data

iii) Drive for Data - driven banking
Empower each other and above the need for harnessing the immense value of data.

- iv) Deployment of analytics and data - driven capabilities to help banks.
- v) Changing customer behaviour and expectation.
- vi) Technological development
- vii) Pressure to reduce the operational costs.



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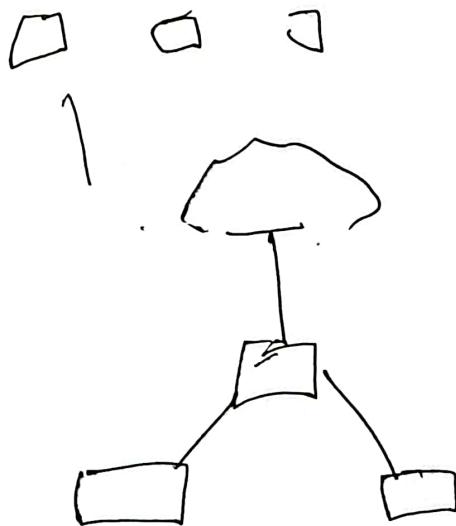
Anc No 2 (b) Amino 1 (b)

Here Show the Difference between
Two-Tier and Three-Tier Database

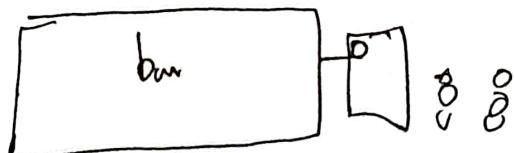
Two Tier	Three-Tier
i) dt in client-server architecture	ii) dt in web-based application
iii) dt in easy to build and maintain	iv) dt in complex to build and maintain.

Three-tier is most suitable because dt runs fast. and dt in complex.

client



Database-



Two Tier and Three Tier Architecture

Aim No 2 (a)

A major purpose of a database system is to provide user with an abstract view of the data.

A database system is a collection of user files and a set of programs that allow user to access and modify these files.

A very major purpose of a database system is to provide user with a database.

It provides a different view and helps in achieving data independence which in turn to enhance the security of data.

Mainly there are three level of abstraction for DBMS.

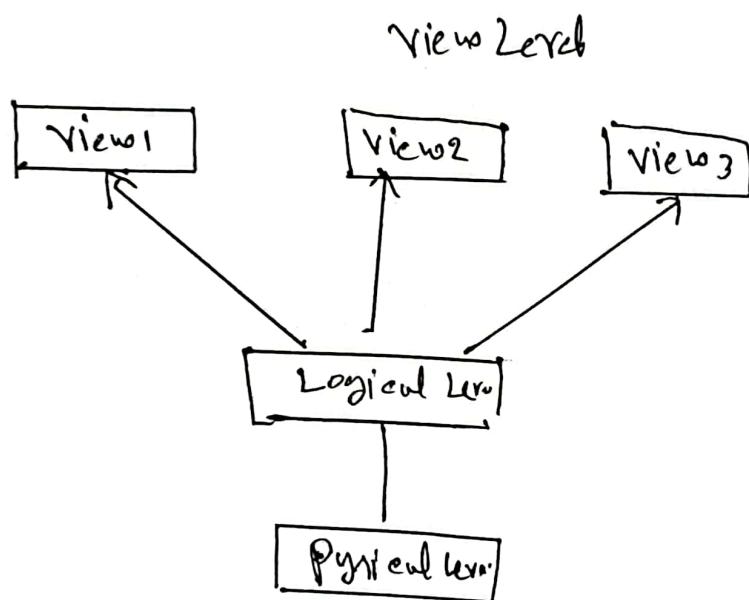
i) Physical level: It is the lowest level of abstraction for DBMS. which defines how the data is actually stored.

b. Logical or conceptual level:

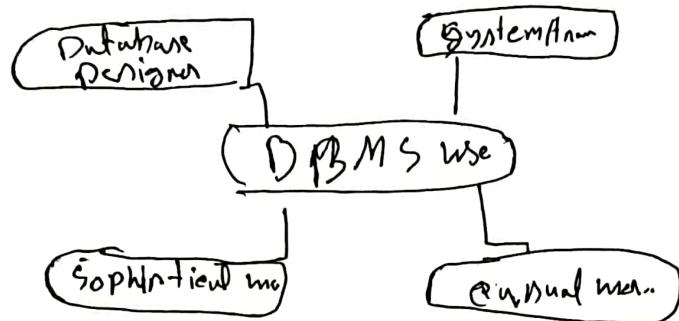
Logical level is the intermediate level or next higher level.

c. View level:

It is the highest level. In view level there are three different levels of view,



Here mention different distinct nodes/accounts of different database user.



User-defined nodes example:

built-in Node	user-defined Node	Value
User	Developers	Alice
User	Testers	Tom, Alice
User	operators	Bob

Ques No 2(a) b

- i. To find the employee (National ID, Name, Salary) with the highest sum salary.

```
SELECT E. NationalID, E. Name, W. Salary
FROM Employee E
JOIN Worker W ON E. NationalID = W. NationalID
ORDER BY W. Salary DESC
```

- ii) To order the companies based on the Salary Range difference (MaxSalary - MinSalary)

```
FROM Company
ORDER BY SalaryRangeDifference;
```

- iii) Look company wise count of employees.

```
SELECT C. CompanyName, COUNT(*) AS EmployeeCount
FROM Company
JOIN Worker W ON C. CompanyName = W. Company;
GROUP BY C. CompanyName;
```

1) Find the Name of the employee who leave
same city of Manager.

SELECT. Name

FROM Employee E

JOIN Manager M ON E.city = (SELECT city FROM Company WHERE CompanyName = M.CompanyName)
WHERE city = (SELECT city FROM Company
WHERE CompanyName = M.CompanyName);

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Ans No 3 (a)

CREATE VIEW combinedResult AS

SELECT Roll,

(Performance * 0.3) AS Sub1,

(MidTerm * 0.3) AS Sub2,

(FinalExam * 0.4) AS Sub3

(Performance * 0.3 + FinalExam * 0.4) AS Total

FROM MarkC1

UNION ALL

SELECT Roll

(Performance * 0.3) AS Sub1,

(MidTerm * 0.3) AS Sub2,

(FinalExam * 0.4) AS Sub3,

(Performance * 0.3 + MidTerm * 0.3 + FinalExam * 0.4) AS Total

FROM MarkC2

UNION ALL

SELECT Roll

(Performance * 0.3) AS Sub1

(MidTerm * 0.3) AS Sub2

(FinalExam * 0.4) AS Sub3,

(Performance * 0.3 + MidTerm * 0.3 + FinalExam * 0.4) AS Total

FROM MarkC3;

Ans No 3(b)

If you want to store the marks of three subjects in a single table. You can design the 'Mark' table with the following structure

CREATE TABLE Mark

Roll INT

Sub1 INT

Sub2 INT

Sub3 INT

Total INT

PRIMARY KEY (Roll)

;

In this structure the "Mark" table has column for Roll (student's roll number); Sub1 (subject 1 marks), Sub2 (subject 2 marks), Sub3 (subject 3 marks); and Total (total marks). The Roll column is designated as the primary key to uniquely identify each student's record.

To display the combined result from the Mark table you can use a simple SELECT statement. SELECT Roll, Sub1 AS Sub1-Marks, Sub2-Marks, Sub3 AS Sub3-Marks, Total FROM Mark

Qn No 4 (a)

CREATE STORED PROCEDURE PrepareGradeSheet()

BEGIN

DECLARE done INT DEFAULT FALSE;

DECLARE null INT;

DECLARE sub1 INT;

DECLARE sub3 INT;

DECLARE subgpa DECIMAL(3,1);

-- Create a temporary table to store the
grade sheet

CREATE TEMPORARY TABLE GradeSheet(

Roll INT,

Sub1 CHAR(1),

Sub2 CHAR(1),

Sub3 CHAR(1),

GPA DECIMAL(3,1)

);

-- Create a temporary table to store the
grade sheet

CREATE TEMPORARY TABLE GradeSheet

Roll INT

```

Sub1 CHAR(1);
Sub2 CHAR(1),
Sub3 CHAR(1),
GPA DECIMAL(3,1)
);

```

Declare a cursor to iterate over the mark tables.

DECLARE cur CURSOR FOR

```

SELECT Roll, Performance, MidTerm, Final
Enum

```

FROM Marks1

UNION ALL

```

SELECT Roll, Performance, MidTerm, FinalExam,
FROM Marks2

```

UNION ALL

```

SELECT Roll, Performance, MidTerm, FinalExam,
FROM Marks3;

```

Declare handler for exception

DECLARE CONTINUE HANDLER FOR

NOT FOUND SET done = TRUE;

OPEN cur.

- Fetch marks from the mark table and calculate GPH

mark_loops

FETCH cur INTO Roll, sub1, sub2, sub3.

IF done THEN

LEAVE mark_loops

END IF;

-- calculate GPH based on grade thresholds

SET gpa = CASE

WHEN sub1 >= 80 AND sub2 >= 80 AND sub3 >= 80 THEN 4.0

. WHEN sub1 >= 60 AND sub2 >= 60 AND sub3 >= 60 THEN 3.0

WHEN sub1 >= 40 AND sub2 >= 40 AND sub3 >= 40 THEN 2.0

ELSE 0.0

END.

-- Determine the letter grades

SET sub1 = CASE

WHEN sub1 >= 80 THEN "A"

WHEN sub1 >= 60 THEN 'B'

WHEN sub1 >= 40 THEN 'C'

END;

SET sub2 = CASE

WHEN sub2 >= 80 THEN 'A'

WHEN sub2 >= 60 THEN 'B'

WHEN sub2 >= 40 THEN 'C'

END;

SET sub3 = CASE

WHEN sub3 >= 80 THEN 'A'

WHEN sub3 >= 60 THEN 'B'

WHEN sub3 >= 40 THEN 'C'

END;

-- Into Insert the Grade into the Grade Sheet

INSERT INTO GradeSheet (roll, sub1, sub2, sub3, gpa)

VALUES (roll, sub1, sub2, sub3, gpa)

char:

CLOSE cur.

- Select the grade sheet data

SELECT Roll, Sub1, Sub2, Sub3, GPA

FROM Grade_sheet;

-- Drop the temporary table

DROP TABLE Grade_sheet;

END

Am No 4(b)

Here Explain ~~consistency~~ consistency with example of operation.

Consistency in DBMS refers to the requirement that any given database transaction change affects data only in an acceptable manner defined by the rules set by the database developer for example in a database.

may have only two values true or false

Data Consistency in dbms			
A	C	I	D
Atomicity	Consistency	Isolation	Durability

Ans No 5(a)

Importance of SQL Triggers.

1. Data Integrity
2. Business Rules Enforcement
3. Audit Trail and Logging
4. Data Consistency

Now let's design a sample SQL Trigger to update the grade table whenever individual subject marks (percentage marks) are entered in the mark table.

```
CREATE TRIGGER updateGrade
AFTER INSERT ON mark
FOR EACH ROW
```

BEGIN

```
DECLARE gpa DECIMAL(3,1);
DECLARE sub1_grade CHAR(1);
DECLARE sub2_grade CHAR(1);
DECLARE sub3_grade CHAR(1);
```

- calculate GPT based on percentage marks.

SET gpa = CASE

WHEN NEW. Sub1 >= 80 AND NEW. Sub2 >= 80 ADD NEW

Sub3 >= 80 THEN 4.0

WHEN NEW Sub1 >= 60 AND NEW Sub2 >= 60 AND
NEW. Sub3 >= 60 THEN 3.0

WHEN NEW. Sub1 >= 40 AND NEW. Sub2 >= 40
AND NEW Sub3 >= 40 THEN 2.0

ELSE 0.0

END

- Determine the letter grade

SET sub1_ grade = CASE

WHEN NEW Sub1 >= 80 THEN 'A'

WHEN NEW Sub1 >= 60 THEN 'B'

WHEN NEW Sub1 >= 40 THEN 'C'

ELSE 'F'

END;

SET Sub2_ grade = CASE

WHEN NEW Sub3 >= 80 THEN 'A'

WHEN NEW Sub3 >= 60 THEN 'B'

WHEN NEW Sub3 >= 40 THEN 'C'

END;

-- Update the Grade Table with the calculated values

UPDATE Grade

SET Sub1 = Sub1_ grade

Sub2 = Sub2_ grade

Sub3 = Sub3_ grade

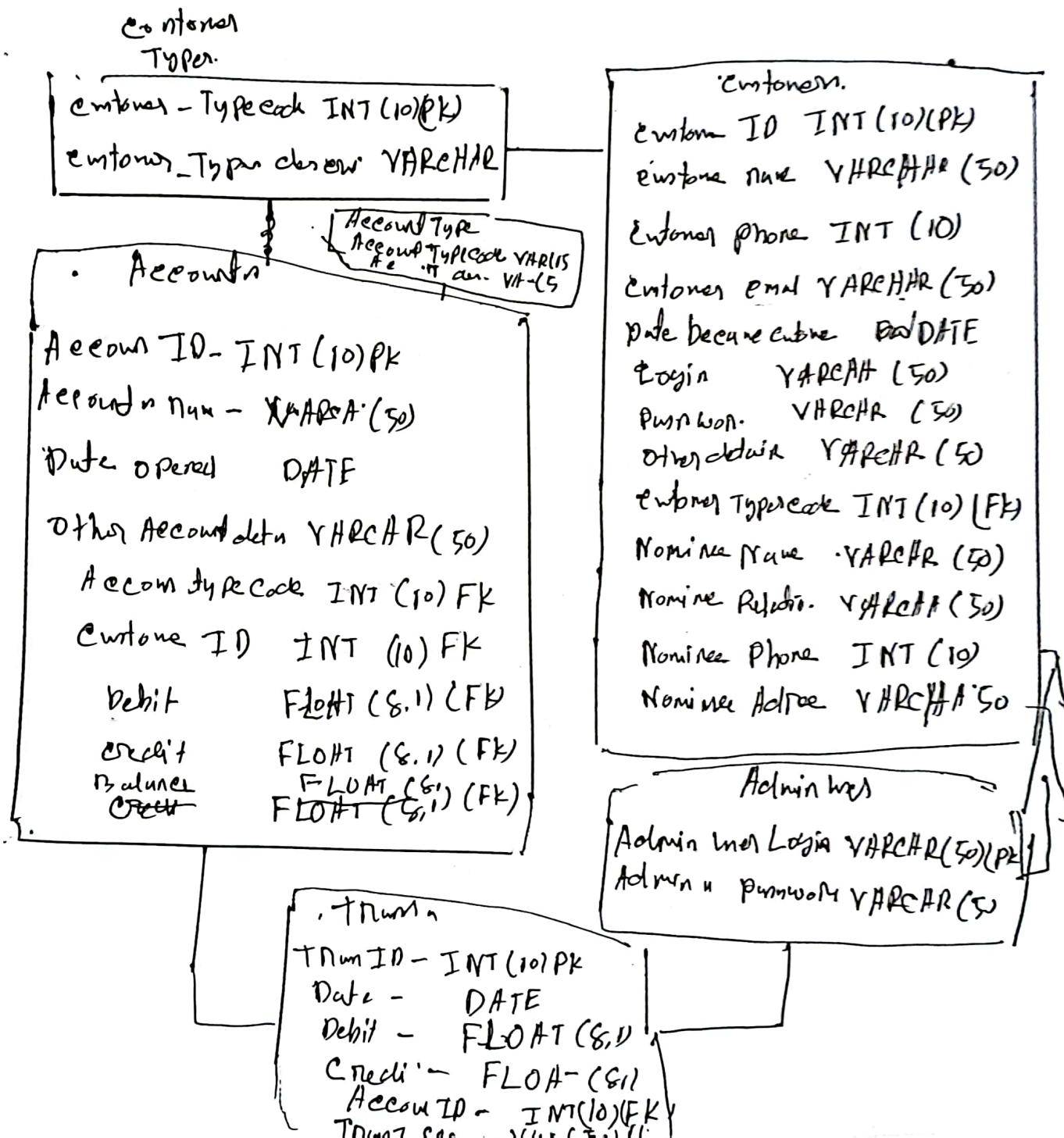
GPA = gpa

WHERE Roll = New Roll;

END;

Ques No 5 (b)

How to draw ER Diagram of my assigned database (Banking database)



Accounts

View

Create the view to retrieve account details.

CREATE VIEW customer_AccountDetails AS

SELECT

- c. customer_ID,
- e. customers_name,
- h. account_ID,
- t. account_name
- f. balance

FROM

customers郝C

JOIN Accounts AS A ON c. customer_ID = h. customer

go
Select * FROM customer_AccountDetails;

go

USE Banking Database

go

USE Banking database.

go

Trigger

- Create a trigger to update the balance of the account after every transaction.

~~CREATE~~

CREATE TRIGGER UpdateAccountBalance

ON Transaction

AFTER INSERT, UPDATE

AS

BEGIN

- update the balance in the Account table base on the transaction.

update A

SET

$$A.\text{Balance} = A.\text{Balance} + (I.\text{Credit} - I.\text{Debit})$$

FROM

Account AS I

JOIN

Inserted AS I ON I.Account_ID = I.AcID

END;

GO

SELECT * FROM Account;

GO

to the Banking database.

Stored Procedure

--- Create stored procedure to get the account balance for a specific customer.

CREATE PROCEDURE Get Account Balance

@CustomerID INT

AS

BEGIN

SET NOCOUNT ON;

SELECT

H. Account ID;

H. Account - Name;

A. Balance

FROM

Account AS H

WHERE

H. Customer-ID = @CustomerID;

END;

go

use BankingDatabase

GO

--- Execute the stored procedure to get ac-