KANDIDAT

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PRØVE

IS-309 1 Videregående databasesystemer

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1 The instant a data block is updated in the database buffer cache, it is written out to the data file.
Velg ett alternativ:

- True
- False

2 If two tables have the same number of rows and the same average row size, the table with the larger PCTFREE value have the larger size
Velg ett alternativ:

- False
- True

3 When a datafile is copied while the database is open, the result can be an inconsistent (invalid) copy of the file.

Select an alternative:

- True
- False

When a datafile is copied while the database is open, the result can be an inconsistent (invalid) copy of the file.

4 The ROWID is a reference to the physical address of a row.

Velg ett alternativ:

- True
- False

5 A *cursor* in PL/SQL marks the location of an error when the code is compiled

Velg ett alternativ:

- False
- True

6 A profile is a collection of privileges that can be granted to a user.

Velg ett alternativ:

- False
- True

7 The (Archived) REDO log files are critical to recovering deleted or corrupted datafiles.

Velg ett alternativ:

- False
- True

8 Oracle processes update data directly in files, not in main memory.

Velg ett alternativ:

- True
- False

9 When a tablespace is created using the UNIFORM extent allocation, new extents that are allocated have the same size.
Velg ett alternativ:

- True
- False

10 Object statistics (statistics about tables, indexes, etc.) can be generated either manually or automatically.
Velg ett alternativ:

- False
- True

11 The following kind of loop executes at least once;
FOR i IN ... LOOP
<statement>;
<statement;
END LOOP;
Velg ett alternativ:

- True
- False

12 A package can be used to implement overloading of procedures and functions.
Velg ett alternativ:

- True
- False

13 In general, it is wise to tune queries before tuning memory.
Velg ett alternativ:

- False
- True

14 Database performance suffers when a database has significant row chaining or row migration.
Select an alternative:

- True
- False

15 When a new user is created, that user, by default, has the CREATE SESSION and CREATE TABLE privileges.

Velg ett alternativ:

- (•) False
- ( ) True

16 Choose all appropriate answers. Oracle uses privileges to

Select one or more alternatives:

- [ ] control how large a file can grow
- [x] control whether users can log into the database (create a session)
- [x] control whether a user can view another user's data
- [x] control whether users can create tables

17 A backup technique that involves shutting down the database and making copies of the closed files is known as what kind of backup?

Velg ett alternativ:

- ( ) hot backup
- (•) cold backup
- ( ) hybrid backup
- ( ) RMAN backup
- ( ) inconsistent backup

18 Place {segment, extent, tablespace, data block} in order from smallest to largest

Velg ett alternativ:

- ( ) Data block, segment, extent, tablespace
- (•) Data block, extent, segment, tablespace
- ( ) Tablespace, segment, extent, data block
- ( ) Segment, data block, extent, tablespace

19 The REQUEST table in a transaction processing system consists of 50,000 rows. This table has a column called *request_created_date*. On average, a search by a particular date returns less than 1% of the rows in the table. The search is performed regularly. The type of index that is best for this type of column is:
Velg ett alternativ:

- No index
- Bitmap index
- B-tree index
- Function-based index

20 You are a DBA in a company with 10 employees. A role is used to give each employee three system privileges and four object privileges. A decision is made to grant an additional object privilege to each employee. How many 'GRANT' statements need to be executed to carry out this change?
Velg ett alternativ:

- Two
- Four
- Eleven
- One
- Ten

21 PCTFREE reserves space in a database block that is used for
Velg ett alternativ:

- Nothing. PCTFREE doesn't have anything to do with database blocks
- Storing new rows that are inserted into a table
- Storing indexes on the table
- Storing rows that expand as a result of updates

22 Choose all appropriate answers. Stored procedures and functions are alike, but they *differ* from one another in that unlike a procedure,
Select one or more alternatives:

- [ ] A function is not stored in the database
- [x] A function can be used in the SELECT clause of an SQL query
- [ ] A function does not have parameters
- [x] A function must always return a value (even, if the value is NULL).

23 Which of the following declarations gives the local variable rec_customer the same structure as a row in the CUSTOMER table? Assume each is within the DECLARE section of a PL/SQL block.

Velg ett alternativ:

- rec_customer VARCHAR(50)
- rec_customer VARCHAR(customer)
- rec_customer customer%TYPE
- rec_customer customer%ROWTYPE

24 The number of rows in a table, the average row length, and the the size of a table are all examples of

Velg ett alternativ:

- system statistics
- cold statistics
- session statistics
- object statistics

25 The background process that writes the change records from the log buffer to the redo log file is

Velg ett alternativ:

- SMON
- DBWR
- ARCH
- LGWR

26 The Oracle file that contains user objects such as tables, indexes, etc. Is called

Velg ett alternativ:

- control file
- datafile
- pfile
- redo log file

27 What principle should guide placement of tables in a tablespace?
Velg ett alternativ:

- All tables should be placed in a single tablespace
- Each table should be placed in its own tablespace
- Tables with the same NEXT extent size should be placed in the same tablespace.
- Tables that are similar in size should be placed in the same tablespace

28 When should you start considering performance?
Velg ett alternativ:

- After the database has been installed
- When developing the physical design of the database
- When installing the production database
- When defining the business process
- When developing the logical design of the database

29 Which of the following is NOT part of a PL/SQL block
Velg ett alternativ:

- ERROR
- END
- DECLARE
- BEGIN

30 In order for a database to be successfully recovered after a system crash, it must

Velg ett alternativ:

- be running in ARCHIVELOG mode
- consist of at least two datafiles
- have all changes stored in main memory
- be running in hot backup mode

31 (Extent sizes) In the following table, the size is data that must be loaded into the database when the table is created. For each table, indicate what INITIAL and NEXT extent size is appropriate (a-l). Explain the logic behind your answer.

Table	*Size*	*Growth – one year*	*INITIAL extent*	*NEXT extent*
TABLE A	4M	1.5M	(a)	(b)
TABLE B	11M	4.6M	(c)	(d)
TABLE C	4M	7.4M	(e)	(f)
TABLE D	15M	2M	(g)	(h)
TABLE E	19M	8M	(i)	(j)
TABLE F	10M	10M	(k)	(l)

Fill in your answer here

Table	Size (MB)	Growth - one year (MB)	Growth - HALF year (MB)	INITIAL extent (MB)	NEXT extent (MB)
Table A	4	1.5	0.75	5	1
Table B	11	4.6	2.3	12	4
Table C	4	7.4	3.7	8	4
Table D	15	2	1	16	2
Table E	19	8	4	24	8
Table F	10	10	5	16	8

I made another column to show the growth - half year because the given is for the whole year.

NEXT extent should be power of 2 (64K, 128K, 256K, … , 1M, 2M, etc) and large enough to store about a half-year's worth of data.

So in case Table A: 1MB > 0.75MB, and 1MB is power of 2, and so on for the rest of the tables.

The INITIAL extent size should be the larger of: NEXT extent size & size needed to load in existing data, rounded to next highest multiple of NEXT extent size.

So in case Table A: 5MB > 4MB and it is the next highest multiple of 1 because 1* 4 = 4 --> So I chose 1 * 5 = 5

32 Use the answer to the extent sizes question (Question 31). How many tablespaces should be created for these? Which tables should be placed in each of these tablespaces? Which extent size do you recommend for each tablespace?

Fill in your answer here

We need 4 tablespaces to create here, one for 1m table (Table A) and this will have 1M next extent size, one for 2m table (Table D) and this will have 2M next extent size, one for 4m tables (Table B, Table C) and this will have 4M next extent size, and one for 8m tables (Table E, Table F) and this will have 8M next extent size.

33 (Table sizing) For each of the following tables, estimate the size (a-d). The row growth is the average number of bytes by which an individual row will expand as a result of updating after it is inserted into the table. Show your calculations.

Table	Row length (bytes) (average)	Row growth (bytes) (average)	Number of rows	Size (MB)
TABLE G	30	5	100.000	(a)
TABLE H	220	5	200.000	(b)
TABLE I	200	0	300.000	(c)
TABLE J	200	20	400.000	(d)

Fill in your answer here

Table	Row length (bytes) (average)	Row growth (bytes) (average)	Number of rows	PCTFREE (calculated)	PCTFREE (value used)	Fudge factor	Size (Bytes)	Size (KB)	Size (MB)
Table G	30	5	100000	14%	15	10	3795000	3706	3.619
Table H	220	5	200000	2%	5	10	50820000	49629	48.466
Table I	200	0	300000	0%	0	10	66000000	64453	62.943
Table J	200	20	400000	9%	10	10	96800000	94531	92.316

I made other columns to calculate the PCTFREE first and used the fudge factor as 10, then I calculated the table size in Bytes so KB so MB as asked.

PCTFREE = Row growth (bytes) (average) / (Row growth (bytes) (average) + Row length (bytes) (average))
After that I chose the nearest value rounded to 5 of the calculated percentage.

Estimated table size = Avg row length * (1+PCTFREE/100) * Number of rows * (1+fudge-factor/100)

Convert from Bytes to KB I devided the size in bytes by / 1024, same from KB to MB.

34 Given the package specification and package body definition found in the attached pdf document or at the URL below, identify as many errors in the code as you can. For each error, indicate how you would fix it. Although there are syntax errors that would prevent the code from compiling, don't just consider syntax or semantics errors. Also consider errors of omission: items that should be included in the code but are not. In your answer, use the line numbers to the left of the code in this PDF document to refer to specific locations in the code. If you wish to work with the code itself to trouble-shoot, you may (although this is not required.) There may be multiple errors of the same type; you don't need to indicate every one of these duplicates. See the code at : https://bit.ly/3uim3UJ

Fill in your answer here

Line 8: It is not a mistake to leave it like how it is, but since it is commented that it would be "open" as default så here we can added like following:

p_request_status IN VARCHAR DEFAULT 'open', -- Default to 'open'

Line 42: Package body procedures and functions must be declared in package first, and here the name changed from CREATE_REQUEST_PP to ADD_REQUEST_PP and that will cause an error. To fix this we can rename it to CREATE_REQUEST_PP.

Line 56: &ROWTYPE must be replaced with &TYPE because ROWTYPE is used as a data type for a whole record from a table, while here the local variable will have just a value of data type varchar since it is dynamically chosen by using the syntax : Table.ColumnInTable%Type.
CP_REQUEST.REQUEST.STATUS%TYPE := 'open'; //Here i am assigning the value 'open' to the local variable because it is used down in insert into statement.

Line 57: Again the same mistake here as Line 56, &ROWTYPE must be replaced with &TYPE. Here the local variable will have just a value of data type date.

Line 63 & 68: The msg inside the String says CREATE_REQUEST_SP but it should be CREATE_REQUEST_PP as the name of the procedure to not get confused from the output.

Line 74: **Select * INTO lv_count_num** will get the records, and this will produce an error because we actually want to check total records returned, if 0 so we know that state code is unvalid. to fix this, the statement should be like:

```
SELECT COUNT(*) INTO lv_count_num FROM
CP_STATE WHERE STATE_CODE = p_state_code;
```

Line 85: Similar check for the FK, So here we can do the same way, and as well so the local variable lv_county_txt is not defined in the IS block at all, So to fix this I would replace everything from Line 85 to 92 with the following:

```
SELECT COUNT(*) INTO lv_count_num FROM
CP_COUNTY WHERE COUNTY_NAME = p_county_name;
IF lv_count_num = 0 THEN
   ex_errormsg := 'Invalid county (' || p_county_name || ')';
   RAISE ex_error;
END IF;
```

Line 102: Missing check for the p_request_estimated_value. To fix this we make same way as p_request_served_children:

```
IF p_request_estimated_value IS NOT NULL
```

```
AND p_request_estimated_value < 0 THEN
    ex_errormsg := 'p_request_estimated_value must be at least
0';
    RAISE ex_error;
END IF;
```

Line 107: The meaning here is to assign the value for the local variable not for the parameter. To fix this, the line 107 should be like following:

```
lv_request_create_date := CURRENT_DATE;
```

Line 122 – ERROR: we need first to create a sequence like following:

```
Create SEQUENCE request_sq start with 101 increment by 1;
```

Here I am assuming that the last row in the table has the id 100. This is just an example. So we can use nextval.

Line 136: error_txt is not the name of the local variable decalred above in the code. To fix this it should be replaced with:

```
lv_error_txt
```

Line 170: repeated error same as line 122.

Line 178: Missing EXCEPTION block to handle the errors. To fix this we add it:

```
  EXCEPTION
    WHEN ex_error THEN
      DBMS_OUTPUT.PUT_LINE(lv_error_txt);
    ROLLBACK;
    WHEN OTHERS THEN
      DBMS_OUTPUT.PUT_LINE('The error code is:  ' ||
SQLCODE);
      DBMS_OUTPUT.PUT_LINE('The error msg is :  ' ||
SQLERRM);
    ROLLBACK;
```

Line 188: The word ERROR must be replaced with EXCEPTION. Because there is no data type called ERROR.

Line 197: The word CALL must be replaced with RAISE. Because the syntax is like this.

Line 199: Missing check on the state_code if it is NULL.

Line 225: The word ERROR must be replaced with EXCEPTION. Because there is no oracle block called ERROR.

Line 228-232: Missing return statement since it is a function. To fix we add:

RETURN NULL;

Line 233: Wrong name of function, it has to be COUNTY_STATS_PF
not CAREPORTAL_STATS_PF.

35 In this class we have covered many topics and you have learned many skills. Pick one specific topic or skill that you struggled to master. Describe the topic or skill (be specific), describe the struggle, and describe how you managed to overcome it. What insights did you gain as a result of this experience into the class, yourself as a student or professional, or your future?

Fill in your answer here

When we were done with the **Assignment 1 - data modelling** and started digging into coding of Procedures, Functions, and put them in packages, That was the easiest and most enjoyable part to be honest. Because it is something I am used to work with from before.

When we moved to DBMS Architecture and started learning about memory, storage and cahcing system. Here I was like Oh God there is so many things to learn and I had null experience from before about them. So I used a lot of time with these topics and I think it is still a bit tricky to have a full understanding around the theory behind the mentioned topics, We went through the smallest possible details in there, and i always asked in lectures if something I did not understand. I am not gonna say that i mastered thoses topics 100% yet, but a lot of it and since it is so interesting it will be a plan for me this summer. It was the most difficult thing in my opinion during the course.

Otherwise managing database as an adminstrator and giving specific rules for users was fun and easy to learn, Getting a better performance and how to recover a database if it crashes is also a typical topic that exist everywhere in applications so i did not struggeled at all with these.

It was one of my favorite classes in my bachelor. I have had a such good experience from before in databases, but can not deny the fact that I got so much better after taking this course. In general so everything was well organized and I can not say that things were difficult to learn. I already started recommending this course to students that will take this course next year. It was just new topics that we got introduced to through a real database case with CARE PORTAL. I am very thankful for this.

Oracle itself in the begining were a bit boring with the syntax and the old style of the sql developer tool. To be honest I struggeled a bit at the begining to like it, it took me almost one month to get used to everything and that was challenging. But we were a group of 5 people and that made things easier by working together.

I am a person that can succeed in anything as long as I like meg self doing it, and after the first month I started liking myself actually in Oracle and stopped complaining about it. Again the confidence that I got in myself after this course makes me really happy, and I would love to continue working deeply with databases in the future. It is just so fun when managing making a good and safe solution that someone will benefit of.

36 **Please go to the next page if you have no appendix.**

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- Pack them in a ZIP-file.

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