PECANWOOD
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INFORMATION TECHNOLOGY PRACTICAL EXAMINAITION.
GRADE 10

NAME: Memo _____ **GRADE:** _____

DATE: 10 NOVEMBER 2022
EXAMINER: MR SC EILERTSEN
MODERATOR: MR C SEEWALD

MARKS: ~~120~~ 125
TIME: ~~2,5~~ HOURS

CSE

INSTRUCTIONS:

1. This examination is made up of 7 pages. Please ensure that your paper is complete.
2. You will be provided with a database called "Birds.accdb" ~~as well as a SQL Answer sheet for question two.~~
3. NOTE: The bird database offers measurement in inches.
4. Note that the screen shots are part of the question and must be followed.
5. Compile, run and save your work often.
6. You may use a non-programmable calculator.
7. Credit is given for good layout, indentation, variable names, class names and good use of whitespace.
8. Your name must appear in the comment section of your solutions.
9. At the end of the examination, you must print out your solutions for question two and three.

Section One **Databases and SQL. Bird food database**

Create a database called "**BirdFood**" in Ms Access using the following schema. The database will have 2 tables i.e. one for birds, one for the foods the birds eats. NOTE: The great weakness with this database design is that each bird can only eat one type of food – we will solve this problem in grade 11.

1.1) Create the bird table in Ms Access using the schema below

CREATE TABLE tblBirds

birdID	INTEGER PRIMARY KEY AUTONUMBER, "Unique identifier for the bird"
birdname	SHORTTEXT, "The common name of the bird"
height	NUMBER, "The height in inches"
wingspan	NUMBER, "The wingspan of the bird in inches"
eggs	NUMBER, "Average number of hatched eggs per brood"
broods	NUMBER, "Number of broods per year or per season"
incubation	NUMBER, "Number of days the eggs are incubated for"
fledging	NUMBER, "Number of days the fledging is raised before it can fly"
food	NUMBER, "Foreign key – this is the primary key from the food table"
nestBuilder	SHORTTEXT, "Who builds the nest – Male, Female, Both or Neither" (8)

1.2) Create the food table in Ms Access using the schema below

CREATE TABLE tblFood

foodID	INTEGER PRIMARY KEY AUTONUMBER, "Unique identifier for the food type"
foodName	SHORTTEXT, "Name of the food item" (3)

1.3) Using the INSERT SQL command add the five bird records shown below.

Here is the data for tblBird

1	Great Blue Heron	52	78	5	1	28	60	1	B
2	Mallard	28	3	10	1	30	52	3	F
3	Common Loon	36	54	2	1	31	80	1	B
4	Bald Eagle	37	84	2	1	36	90	4	B
5	Golden Eagle	40	90	3	1	45	80	1	B

Write ONE of your INSERT commands out in the space below for marking.

INSERT INTO tblBirds (birdname, height, wingspan, eggs, broods, incubation, fledging, food, nestBuilder)
VALUES ("Mallard", 28, 3, 10, 1, 30, 52, 3, "F") (7)

18

1.4) Using the INSERT SQL command add the four records shown below.

Here is the data for tblFood

1	Fish
2	Insects
3	Seeds
4	Carrion

Write ONE of your INSERT commands out in the space below for marking.

INSERT INTO tblFood (foodName)
VALUES ("Fish")
No foodID autonumber (4)

1.5) Update the record for Golden Eagle – the number of eggs must be 4

Write your UPDATE commands out in the space below for marking.

UPDATE tblBird SET eggs = 4
WHERE birdID = 5 (5)

1.6) It is decided that the mallard, being so small, does not belong in the special bird database. Therefore, delete the mallard

Write your DELETE commands out in the space below for marking.

DELETE FROM tblBird
WHERE birdID = 2 (4)

13

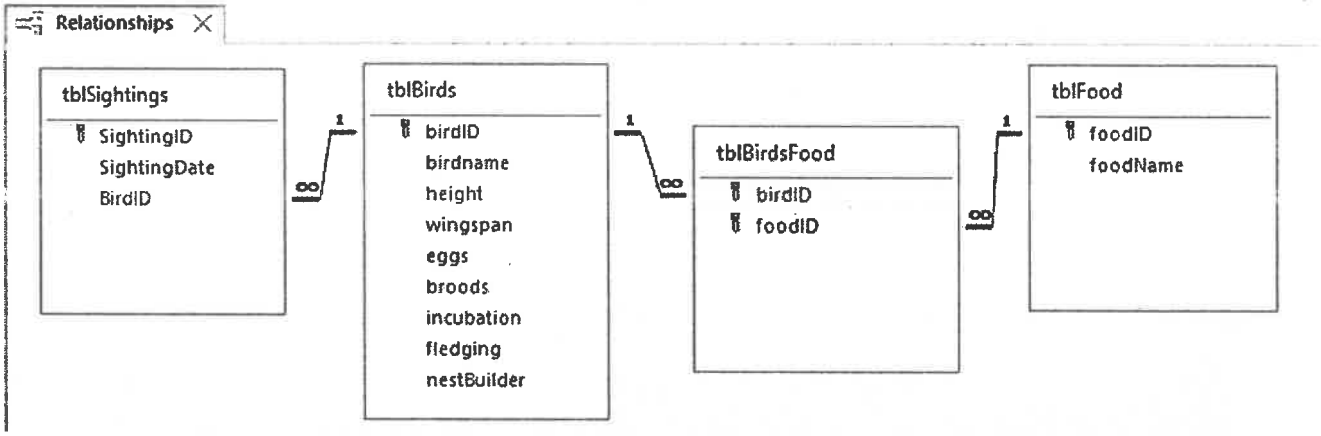
Make sure that your database is saved in the exam folder on the server. Your teacher will mark it on the server.

(5)

~~[31]~~ 1

[36]

Section Two **SQL SELECT queries**



You have been provided with a new database called "Birds.accdb". This database has a list of all the birds found on a ranch in Utah, USA. The database records their eating habits as well as the sightings. When a bird is sighted the time and date is filled into the sightings table.

This a more advanced version of the birds food database in question one – the joining table "tblBirdsFood" allows a bird to eat more than one type of food. Equally each type of food may be eaten by more than one type of bird.

tblBirdsFood

birdID	foodID	Click
1	4	
1	5	
1	12	
1	19	
2	1	
2	8	
2	20	
2	21	

Explanation:

Bird ID 1 eats food ID 4, 5 12, and 19

Bird ID 2 eats food ID 1, 8, 20, and 21

Etc

You will notice that **both fields together** form the primary key (1-4 is unique, 1-5 is unique, 1-12 is unique etc)

Study the data in this database before you attempt the questions below. Understanding the data in the database is the first step to understanding how to write the queries.

Open the database in Ms Access and then create SQL queries for the following. Once your query is working to the best of your ability, copy and paste your query solution into the SQL answer sheet provided. (Ms Word)

1) Write a query that will give a list of the bird's names only listed alphabetically (see below) (4)

2) Write a query that will give a list of the bird's names and height. The list must be sorted by height from biggest to smallest (see below) (4)

Query 1

Query1

birdname
Amerian Coot
American Crow
Anhinga
Bald Eagle
Belted Kingfisher
Black Skimmer
Brown Pelican
Canadian Goose
Common Loon
Common Merganser
Common Sea Gull
Double-crested Cormorant
Golden Eagle
Great Blue Heron
Great Egret
Green Heron
Mallard
Mute Swan
Osprey
Pied-billed Grebe
Red Tailed Hawk
Ring-billed Gull
Turkey Vulture

Query 2

Query2

birdname	height
Mute Swan	60
Brown Pelican	54
Great Blue Heron	52
Canadian Goose	43
Golden Eagle	40
Great Egret	38
Bald Eagle	37
Common Loon	36
Anhinga	35
Double-crested Cormorant	33
Turkey Vulture	32
Mallard	28
Common Merganser	27
Red Tailed Hawk	25
Osprey	24
Green Heron	22
Black Skimmer	20
Ring-billed Gull	19
Common Sea Gull	18
American Crow	18
Amerian Coot	16
Belted Kingfisher	13
Pied-billed Grebe	13

3) The grass is roughly a meter tall. Despite this Andrew can see the head of a heron walking by, its head pocking above the grass. Write a SQL query to determine if Andrew is seeing a great blue heron or a green heron.

(one meter is 40 inches) (2)

4) Betty is writing a fantasy story about a giant bird with a massive wingspan that flies in utter silence. She asks you to write a SQL query to suggest a suitable bird for her story using the birds listed in your database. (3)

nice scenario's

5) Great Aunt Mary saw a Canadian Goose in the early morning and died at lunchtime. Write a SQL query to determine the **year** (only, not day and month) that this happened. The Canadian Goose is BirdID 9.

See below (5)

6) Utah is in the Northern Hemisphere. Write a query to display the BirdIDs of all the birds sighted in the summer months See below. (5)

Query 5

Query5

birdID	Year
9	2019
0	

Query 6

Query6

birdID	Month
14	9
7	5
23	9
12	4
18	8
11	6
17	8
22	5
21	6
16	9
7	8
1	8
4	8
5	4
19	7
0	

7) Write a query to find the longest incubation time. Give this derived column a label of "Longest Incubation Time"

(3)

Query 7

Query7

Longest Incubation Time
45

Query 8

Query8

birdID	foodID
1	4
21	4

8) Write a query to find the birdID numbers of birds that eat frogs. See above. (3)

9) Write a query to determine, in months, how long ago (from today's date) it was that an Osprey was sighted. See below – this is what your result set must look like. (4)

Query9

Last sighting in months	SightingID	SightingDate	BirdID
5	3	2019/05/21 12:00:00	7
2	19	2022/08/19 15:15:00	7
	(New)		0

[33]

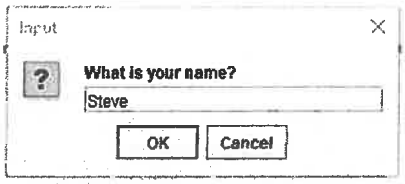
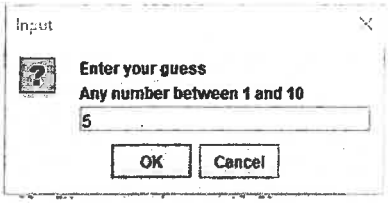
Section Three **One class, many static methods – Input, Processing, Output with OOP**

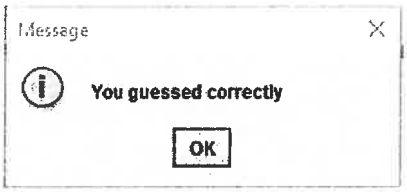
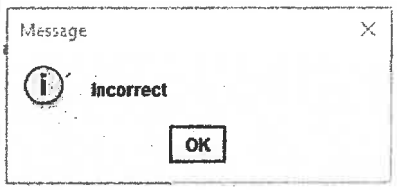
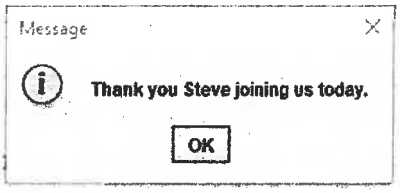
3.1) Write a guessing game program that makes use of one class, but many different static methods and variables.

Your program must make use of six different static methods . . .

1. One – A method for the login screen that asks you for your name and then welcomes you by name before allowing you to continue. (3)
2. Two – A method that generates a random number from 1 to 10 inclusive. (3)
3. Three – A method that allows you to guess what the random number is. (2)
4. Four – A method to report the outcome "Correct" or "Incorrect". (3)
5. Five – A method thanking the person for playing the game. (2)
6. Six - The main method that calls the methods in the correct order. (3)

Use the screen shots below to get a better idea of how your program must look and work.

Screen shot 1	Screen shot 2	Screen shot 3
		

Screen shot 4	Screen shot 5	Screen shot 6
		

Your program layout, OOP, variables, libraries, indentation, whitespace and correct use of Java programming syntax and conventions. (5)

3.2) Modify your program to allow the user to have three attempts at guessing the random number. (7)

[28 X 2 = 56]

28

Total Marks: 120

Birds G. 10 IT prac 2022

Q2

1)

```
SELECT birdname
FROM tblBirds
ORDER BY birdname;
```

2)

```
SELECT birdname, height
FROM tblBirds
ORDER BY height DESC;
```

3)

```
SELECT birdname, height
FROM tblBirds
WHERE height > 40;
```

4)

```
SELECT TOP 5 wingspan, birdname
FROM tblBirds
ORDER BY wingspan DESC;
```

5)

```
SELECT birdID, YEAR(sightingDate) AS [Year]
FROM tblSightings
WHERE birdID = 9;
```

6)

```
SELECT birdID, month(sightingDate) AS [Month]
FROM tblSightings
WHERE MONTH(sightingDate) IN (4,5,6,7,8,9);
```

7)

```
SELECT Max(incubation) AS [Longest Incubation Time]
FROM tblBirds;
```

8)

```
SELECT tblBirdsFood.birdID, foodID
FROM tblBirdsFood
WHERE (((tblBirdsFood.[foodID])=4));
```

9)

```
SELECT MONTH(now()) - MONTH(sightingDate) AS [Last sighting in months], *
FROM tblSightings
WHERE birdID = 7;
```

Q3

```
1 // Nov prac exam question 3
2
3 import javax.swing.JOptionPane;
4
5 public class Question3 {
6
7    private static String myName = null;
8    private static int secretNumber = 0;
9    private static int myGuess = 0;
10
11   public static void main(String[]args) {
12
13      welcome();
14      generateRandom();
15      guess();
16      compare();
17      farewell();
18
19   } // end main
20
21   private static void welcome() {
22
23      myName = JOptionPane.showInputDialog(null, "What is your name?");
24      JOptionPane.showMessageDialog(null, "Welcome " + myName + " to my guessing game");
25
26   } // end welcome
27
28   private static void generateRandom(){
29
30      secretNumber = (int)(Math.random()*10) + 1;
31      System.out.println(secretNumber);
32   } // end generate random
33
34   private static void guess() {
35
36      myGuess = Integer.parseInt(JOptionPane.showInputDialog(null, "Enter your guess" + "\n" + "Any number be
tween 1 and 10"));
37
38   } // end guess
39
40   private static void compare() {
41
42      if(myGuess == secretNumber){
43         JOptionPane.showMessageDialog(null, "You guessed correctly");
44      }
45      else {
46         JOptionPane.showMessageDialog(null, "Incorrect");
47      }
48   }
49
50   private static void farewell() {
51
52      JOptionPane.showMessageDialog(null,"Thank you " + myName + " joining us today.");
53
54   } // end farewell
55
56 } // end class
```

Layout ✓✓
etc

Q3.1

```
1 // Nov prac exam question 3
2 // Three guesses to get the random secret number
3 // Random number is 1 to 10 inclusive
4
5 import javax.swing.JOptionPane;
6
7 public class Question3_1 {
8
9    private static String myName = null;
10   private static int secretNumber = 0;
11   private static int myGuess = 0;
12   private static int counter = 0;
13
14   public static void main(String[]args) {
15
16      welcome();
17      generateRandom();
18      guess();
19      farewell();
20
21   } // end main
22
23   private static void welcome() {
24
25      myName = JOptionPane.showInputDialog(null, "What is your name?");
26      JOptionPane.showMessageDialog(null, "Welcome " + myName + " to my guessing game");
27
28   } // end welcome
29
30   private static void generateRandom(){
31
32      secretNumber = (int)(Math.random()*10) + 1;
33      System.out.println(secretNumber);
34   } // end generate random
35
36   private static void guess() {
37
38      myGuess = Integer.parseInt(JOptionPane.showInputDialog(null, "Enter your guess" + "\n" + "Any number be
tween 1 and 10"));
39      compare();
40
41   } // end guess
42
43   private static void compare() {
44
45      if(myGuess == secretNumber){
46         JOptionPane.showMessageDialog(null, "You guessed correctly");
47      }
48      else {
49         JOptionPane.showMessageDialog(null, "Incorrect");
50         if (counter < 2){
51            counter++;
52            guess();
53         }
54      } // end else
55   } // end compary
56
57   private static void farewell() {
58
59      JOptionPane.showMessageDialog(null,"Thank you " + myName + " joining us today.");
60
61   } // end farewell
62
63 } // end class
```

Recursive solution

first guess works

subsequent guesses correctly placed

7

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Information Technology: Moderation Sheet

Question Paper

Name of exam: IT Prac Grade: 10 Date: 10 Nov 22

Branding and layout	Satisfactory	Not satisfactory
Question numbering	Satisfactory	Not satisfactory
Page numbering	Satisfactory	Not satisfactory
Mark allocation	Satisfactory	Not satisfactory
Variety of question styles	Satisfactory	Not satisfactory
Enrichment source material	Satisfactory	Not satisfactory
Analysis grid	Satisfactory	Not satisfactory
Detailed memo with mark allocation	Satisfactory	Not satisfactory

Comments: Good scenario's.

C Oberholzer C Oberholzer 2/11

Name of moderator: **Signature:** **Date:**