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Class : XII COMPUTER SCIENCE EM  FIRST REVISION EXAM 2020 ANSWER KEY  DATE : 13.01.2020

PART - I

2. Tuples  7. Def  12. MS Excel
3. Protected  8. WELC  13. get opt module
5. Comma  10. __

PART - II

   • The 'wishful thinking' strategy is used for designing programs.
   • Wishful Thinking is the formation of beliefs and making decisions according to what might be pleasing to imagine instead of by appealing to reality.

17. Define Pseudo code.
   • It’s simply an implementation of an algorithm in the form of annotations and informative text written in plain English.
   • It has no syntax like any of the programming language and thus can’t be compiled or interpreted by the computer.

18. Key features of python
   • It is a general purpose programming language which can be used for both scientific and non-scientific programming.
   • It is a platform independent programming language.
   • The programs written in Python are easily readable and understandable.

19. Advantages of function?
   It avoids repetition and makes high degree of code reusing. It provides better modularity for your application.

20. 0, 1, 4, 9, 16, 25

21. Instantiation
   • The process of creating object is called as "Class Instantiation".

22. Advantages of DBMS
   • Segregation of application program  • Minimal data duplication or Data Redundancy
   • Easy retrieval of data using the Query Language  • Reduced development time and maintenance

23. difference between fetchone() and fetchmany()

<table>
<thead>
<tr>
<th>fetchone()</th>
<th>fetchmany()</th>
</tr>
</thead>
<tbody>
<tr>
<td>The fetchone () method returns the next row of a query result set or None in case there is no row left</td>
<td>fetchmany() method that returns the next number of rows (n) of the result set</td>
</tr>
</tbody>
</table>

24. types of Visualizations in Matplotlib.
   • Line plot  • Scatter plot  • Histogram  • Box plot  • Bar chart and  • Pie chart

PART - III

25. Strlen is called pure function
   • Pure functions are functions which will give exact result when the same arguments are passed.
   • The strlen is a pure function because the function takes one variable as a parameter, and accesses it to find its length.
   • This function reads external memory but does not change it, and the value returned derives from the external memory accessed.

26. Access control is required
   • Access control is a security technique that regulates who or what can view or use resources in a computing environment.
   • It is a fundamental concept in security that minimizes risk to the object. In other words access control is a selective restriction of access to data.

27. Control structure.
   A program statement that causes a jump of control from one part of the program to another is called control structure or control statement.
   • Sequential  • Alternative or Branching  • Iterative or Looping

   1. When we define a variable outside a function, it’s global by default. You don’t have to use global keyword.
   2. We use global keyword to read and write a global variable inside a function.
   3. Use of global keyword outside a function has no effect

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29. **Advantages of Tuples over a list**
   1. The elements of a list are changeable (mutable) whereas the elements of a tuple are unchangeable (immutable), this is the key difference between tuples and list.
   2. The elements of a list are enclosed within square brackets. But, the elements of a tuple are enclosed by parenthesis.
   3. Iterating tuples is faster than list.

30. **Define constructor and destructor in Python**
   - In Python, the constructors should be defined using `__init__` special function.
   - Destructors defined using `__del__` special function.

31. **Types of DBMS users.**
   - **Database Administrators:** Database Administrator or DBA is the one who manages the complete database management system. DBA takes care of the security of the DBMS, managing the license keys, managing user accounts and access etc.
   - **Application Programmers or Software Developers:** This user group is involved in developing and designing the parts of DBMS.
   - **End User:** All modern applications, web or mobile, store user data. Applications are programmed in such a way that they collect user data and store the data on DBMS systems running on their server. End users are the one who store, retrieve, update and delete data.
   - **Database designers:** Database designers are responsible for identifying the data to be stored in the database for choosing appropriate structures to represent and store the data.

32. **Open() function of python. difference between the two methods**
   - Python has a built-in function open() to open a file.
   - This function returns a file object, also called a handle, as it is used to read or modify the file accordingly.
   - For Example 
     
     ```
     f = open("sample.txt")  
     f = open("c:\pyprg\ch13sample5.csv")
     ```

33. **sys.argv**
   - sys.argv is the list of command-line arguments passed to the Python program.
   - Argy contains all the items that come along via the command-line input, it's basically an array holding the command-line arguments of the program.

**PART - IV**

34.A) **Facilitate data abstraction**
To facilitate data abstraction, you will need to create two types of functions: constructors and selectors.

**Constructors**
- Constructors are functions that build the abstract data type. Selectors are functions that retrieve information from the data type.

For example, say you have an abstract data type called city. This city object will hold the city’s name, and its latitude and longitude. To create a city object, you’d use a function like `city = makecity(name, lat, lon)`

**Selectors**
- Selectors are nothing but the functions that retrieve information from the data type.

Therefore in the above code

```python
getname(city)  getlat(city)  getlon(city)
```

34.B) **Binary search**
Binary search also called half-interval search algorithm. It finds the position of a search element within a sorted array. The binary search algorithm can be done as divide-and-conquer search algorithm and executes in logarithmic time.

**Pseudo code:**
1. Start with the middle element:  
   - If the search element is equal to the middle element of the array i.e., the middle value = number of elements in array/2, then return the index of the middle element.
   - If not, then compare the middle element with the search value
   - If the search element is greater than the number in the middle index, then select the elements to the right side of the middle index, and go to Step-1.  
   - If the search element is less than the number in the middle index, then select the elements to the left side of the middle index, and start with Step-1.
2. When a match is found, display success message with the index of the element matched.
3. If no match is found for all comparisons, then display unsuccessful message.

35.A) **Tokens in Python**
Python breaks each logical line into a sequence of elementary lexical components known as Tokens.

1) Identifiers, 2) Keywords, 3) Operators, 4) Delimiters and 5) Literals. 
Whitespace separation is necessary between tokens, identifiers or keywords.

(1) **Identifiers**
- An Identifier is a name used to identify a variable, function, class, module or object.
- An identifier must start with an alphabet (A..Z or a..z) or underscore (_).
1. Hierarchical Model

The Hierarchical Model is mainly used in IBM Main Frame computers. Hierarchical model was developed by IBM as Information Management System. This model represents a one-to-many relationship i.e., parent-child relationship. One child can have only one parent but one parent can have many children. This model is mainly used in IBM Main Frame computers.

2. Relational Model

In Hierarchical model, data is represented as a simple tree like structure form. This model represents a one-to-many relationship i.e parent-child relationship. One child can have only one parent but one parent can have many children. This model is mainly used in IBM Main Frame computers.

3. Network Database Model

This model represents a many-to-many relationship among the entities. Each entity can be connected to many others and reciprocally. This model is mainly used in IBM Main Frame computers.

4. Entity Relationship Model

This model represents a many-to-many relationship among the entities. Each entity can be connected to many others and reciprocally. This model is mainly used in IBM Main Frame computers.

5. Object Model

This model represents a many-to-many relationship among the entities. Each entity can be connected to many others and reciprocally. This model is mainly used in IBM Main Frame computers.

Set Operations Supported by Python

(i) Union:

- It includes all elements from two or more sets
- In Python, the operator | is used to union of two sets.
- The function union() is also used to join two sets in Python.

Example: >>> setA={2, 4, 6, 8} >>> setB={'A', 'B', 'C', 'D'} >>> Uset=setA|setB >>> print(Uset)

Output: {2, 4, 6, 8, 'A', 'B', 'C', 'B'}

(ii) Intersection:

- It includes the common elements in two sets
- The operator & is used to intersect two sets in Python.
- The function intersection() is also used to intersect two sets in Python.


Output: {'A', 'B', 'C', 'D'}

(iii) Difference:

- It includes all elements that are in first set (say set A) but not in the second set (say set B)
- The minus (-) operator is used to difference set operation in Python.
- The function difference() is also used to difference operation.


Output: {2, 4}

(iv) Symmetric difference:

- It includes all the elements that are in two sets (say sets A and B) but not the one that are common to two sets.
- The caret (^) operator is used to symmetric difference set operation in Python.
- The function symmetric_difference() is also used to do the same operation.

Example: >>> setA={'A', 'B', 'C', 'D'} >>> setB={'A', 'B', 'C', 'D'} >>> print(setA ^ setB)

Output: {2, 4, 'B', 'C'}

3. Dimension Support of Data Model

Following are the different types of a Data Model:

1. Hierarchical Model
2. Relational Model
3. Network Database Model
4. Entity Relationship Model
5. Object Model

1. Hierarchical Model

- Hierarchical model was developed by IBM as Information Management System.
- In Hierarchical model, data is represented as a simple tree like structure form.
- This model represents a one-to-many relationship i.e., parent-child relationship.
- One child can have only one parent but one parent can have many children.
- This model is mainly used in IBM Main Frame computers.

2. Relational Model

- In Relational model, data is represented as a table form.
- This model represents a many-to-many relationship among the entities.
- This model is mainly used in IBM Main Frame computers.

3. Network Database Model

- In Network model, data is represented as a network structure form.
- This model represents a many-to-many relationship among the entities.
- This model is mainly used in IBM Main Frame computers.

4. Entity Relationship Model

- Entity Relationship model is mainly used in IBM Main Frame computers.
- This model represents a many-to-many relationship among the entities.
- This model is mainly used in IBM Main Frame computers.

5. Object Model

- Object model is mainly used in IBM Main Frame computers.
- This model represents a many-to-many relationship among the entities.
- This model is mainly used in IBM Main Frame computers.

General Format of Count( )

Example: >>> str1="Raja Raja Chozhan" >>> print(str1.count('Raja'))

Output: 2

Examples:

(i) swapcase( )

This function will change case of every character to its opposite case vice versa.

Example: >>> str1="tAmiL NaDu" >>> print(str1.swapcase())

Chennai

(ii) capitalize( )

Used to capitalize the first character of the string.

Example: >>> city="chennai" >>> print(city.capitalize())

Chennai

3.5) B)

Operators:

(i) Arithmetic Operators

- The function sum( ) is also used to calculate the sum of all elements in a set.

Example: >>> setA={2, 4, 6, 8} >>> print(sum(setA))

Output: 20

Sets:

- The function set( ) is also used to create a set from a list.

Example: >>> setB=set(['A', 'B', 'C', 'D'])

Output: {'A', 'B', 'C', 'D'}

- The function intersection( ) is also used to find the common elements in two sets.

Example: >>> setA={2, 4, 6, 8} >>> setB={'A', 'B', 'C', 'D'} >>> print(setA & setB)

Output: {4, 6}

- The function union( ) is also used to join two sets in Python.

Example: >>> setA={2, 4, 6, 8} >>> setB={'A', 'B', 'C', 'D'} >>> Uset=setA|setB >>> print(Uset)

Output: {2, 4, 6, 8, 'A', 'B', 'C', 'B'}

- The function difference( ) is also used to find the elements that are in the first set (say set A) but not in the second set (say set B).

Example: >>> setA={2, 4, 6, 8} >>> setB={'A', 'B', 'C', 'D'} >>> print(setA - setB)

Output: {2, 4, 6, 8}

- The function symmetric_difference( ) is also used to find the elements that are in both sets (A and B) but not in both.

Example: >>> setA={2, 4, 6, 8} >>> setB={'A', 'B', 'C', 'D'} >>> print(setA ^ setB)

Output: {2, 4, 6, 8, 'A', 'B', 'C', 'D'}

6. A)

Set Operations Supported by Python with Suitable Example.

(i) Union:

- It includes all elements from two or more sets
- In python, the operator | is used to union of two sets.

Example 1: setA={2, 4, 6, 8} setB={'A', 'B', 'C', 'D'} Uset=setA|setB print(Uset)

Output: {2, 4, 6, 8, 'A', 'B', 'C', 'B'}

(ii) Intersection:

- It includes the common elements in two sets
- The operator & is used to intersect two sets in python.

Example 1: setA={'A', 'B', 'C', 'D'} setB={'A', 'B', 'C', 'D'} print(setA & setB)

Output: {'A', 'B', 'C', 'D'}

(iii) Difference:

- It includes all elements that are in first set (say set A) but not in the second set (say set B)
- The minus (-) operator is used to difference set operation in python.


Output: {'A', 'B'}

(iv) Symmetric difference:

- It includes all the elements that are in two sets (say sets A and B) but not the one that are common to two sets.
- The caret (^) operator is used to symmetric difference set operation in python.

Example 1: setA={'A', 'B', 'C', 'D'} setB={'A', 'B', 'C', 'D'} print(setA ^ setB)

Output: {2, 4, 'B', 'C'}
2. Relational Model
- The Relational Database model was first proposed by E.F. Codd in 1970. Nowadays, it is the most widespread data model used for database applications around the world.
- The basic structure of data in relational model is tables (relations).
- All the information’s related to a particular type is stored in rows of that table.
- Hence tables are also known as relations in a relational model. A relation key is an attribute which uniquely identifies a particular tuple (row in a relation (table)).

3. Network Model
- Network database model is an extended form of hierarchical data model.
- The difference between hierarchical and Network data model is:
  - In a hierarchical model, a child record has only one parent node,
  - In a Network model, a child may have many parent nodes. It represents the data in many-to-many relationships.
- This model is easier and faster to access the data.

4. Entity Relationship Model. (ER model)
- In this database model, relationships are created by dividing the object into entity and its characteristics into attributes.
- It was developed by Chen in 1976. This model is useful in developing a conceptual design for the database.
- It is very simple and easy to design logical view of data. The developer can easily understand the system by looking at ER model constructed.

5. Object Model
- Object model stores the data in the form of objects, attributes and methods, classes and Inheritance.
- This model handles more complex applications, such as Geographic information System (GIS), scientific experiments, engineering design and manufacturing.
- It is used in file Management System. It represents real world objects, attributes and behaviors. It provides a clear modular structure.
- It is easy to maintain and modify the existing code.

37)A) CREATE TABLE Student
(  
Admno integer NOT NULL PRIMARY KEY, → Primary Key constraint  
Name char(20)NOT NULL,  
Gender char(1),  
Age integer,  
Place char(10),  
);

37)B) READERS() METHODS
You can read the contents of CSV file with the help of csv.reader() method.
- The reader function is designed to take each line of the file and make a list of all columns.
- Using this method one can read data from csv files of different formats like quotes (" ") , pipe (|) and comma (,).
- The syntax for csv.reader() sv.reader(fileobject,delimiter,fmtparams)

Methods to read a file
1. CSV file - data with default delimiter comma (,)  
2. CSV file - data with Space at the beginning  
3. CSV file - data with quotes  
4. CSV file - data with custom Delimiters

38)A) Features of Python over C++
- Python uses Automatic Garbage Collection whereas C++ does not.
- C++ is a statically typed language, while Python is a dynamically typed language.
- Python runs through an interpreter, while C++ is pre-compiled.
- Python code tends to be 5 to 10 times shorter than that written in C++.
- In Python, there is no need to declare types explicitly where it should be done in C++
- In Python, a function may accept an argument of any type, and return multiple values without any kind of declaration beforehand. Whereas in C++ return statement can return only one value.

38)B) SQLITE and the steps used to use it.
- SQLite is a simple relational database system, which saves its data in regular datafiles or even in the internal memory of the computer.
- It is designed to be embedded in applications, instead of using a separate database server program such as MySQL or Oracle.
- SQLite is fast, rigorously tested, and flexible, making it easier to work. Python has a native library for SQLite.

   Steps to use SQLite:
Step 1: Import sqlite3
Step 2: Create a connection using connect() method and pass the name of the database File  
- Passing the name of the database to be accessed. If the database already exists the connection will open the same. Otherwise, Python will open a new database file with the specified name.
Step 3: Set the cursor object cursor = connection. cursor( )
- A control structure used to traverse and fetch the records of the database.