UDGAM SCHOOL FOR CHILDREN
IBCP BOARD
CLASS XI
AI WORKSHEET BASED ON SUBJECT 1 AND SUBJECT 2

Following are question based on case study. Read the problem and answer it accordingly

A Case Study from the Banking Industry: Using Code Reuse to Improve the Quality and Consistency of Software Applications

Case Study: A large bank was developing a new software application for online banking. The bank wanted to develop the application quickly and cheaply, and it also wanted to ensure that the application was consistent with the bank's existing software applications.

Case Study 2: Medical Diagnosis

Problem:

Develop an AI system that can diagnose common medical conditions based on a patient's symptoms. Use Top-down Approach:

Case Study 3: Face Recognition

Problem:

Develop an AI system that can recognize faces from images and videos. Use Top-down Approach:

Case study 4: Developing a graphical user interface (GUI) using the bottom-up approach would involve:

Case study 5:

One interesting real-time case study that showcases the role of logic in heuristic-based solutions in programming for problem-solving is the development of chess-playing AI systems.

Chess is a complex game with an enormous number of possible moves and positions. Creating an AI program that can play chess at a high level requires a

combination of logic and heuristics. Let's explore how these two components come into play:

ANSWER THE FOLLOWING QUESTION

1. What is the central concern of AI Ethics and why is it important?
2. List two characteristics of successful AI systems and explain their significance.
3. How might AI impact traditional job roles? Provide an example for each impact.
4. What is the main goal of Cognitive Computing?
5. Briefly explain the difference between structured and unstructured data.
6. What role do Neural Networks play in Machine Learning?
7. Define Artificial Intelligence and provide a brief overview of its significance.
8. Explain the Turing Test and its relevance in testing AI capabilities.
9. Explain about Supervised, Unsupervised and Reinforcement learning?

WRITE FOLLOWING PROGRAM USING JAVA

1. Write java program calculates the area of a circle using the formula `π * r²`. The `calculateCircleArea` function takes the radius as input and returns the area as output.
2. program calculates the factorial of a number by using function in java
3. write java program to reverse a string
4. write java program to fid largest number among array
5. by using function, write java program of making simple calculator

MULTIPLE CHOICE QUESTION

1. What is the primary purpose of heuristics in problem-solving?
   a) To provide a detailed and complex solution
   b) To guarantee an optimal solution
   c) To offer a quick and efficient approach to problem-solving
   d) To replace all traditional problem-solving methods

2. Which of the following is a common characteristic of heuristics?
   a) They require extensive data for every decision
   b) They are based on detailed algorithms
   c) They often involve using past experiences or common sense
   d) They always yield the most accurate results

3. Heuristics are particularly useful in which of the following scenarios?
   a) When an exhaustive analysis is practical and feasible
   b) When there is an abundance of time for decision-making
   c) When quick decision-making is required under uncertainty
   d) When the most accurate and precise solution is necessary

4. Which of the following is a potential downside of using heuristics in decision-making?
   a) They can be too time-consuming
   b) They may lead to biases or errors
   c) They are too complex to understand
   d) They always require a lot of data

5. In the context of heuristics, what does the term 'availability heuristic' refer to?
   a) The tendency to prefer solutions that are readily available
   b) Making judgments based on how easily examples come to mind
   c) Choosing the first available option without considering others
   d) Ignoring available data in decision-making

6. An AI system uses two broad classes of data namely content data which includes the raw video streams title, description, etc, and user activity data that includes rating a video, favoriting/liking a video, or subscribing to an uploader, and watch time. Based on this, the AI system measures a user's engagement and happiness. It then starts computing personalized recommendations to the user. Which of the following applications can you relate to this?
   a) self-driving car
   b) Siri
   c) email filters
   d) YouTube

7. Data about the houses such as square footage, number of rooms, features, whether a house has a garden or not, and the prices of these houses, i.e., the corresponding labels are fed into an AI machine. By leveraging data coming from thousands of houses, their features and prices, we can now train the model to predict a new house's price. This is an example of
   a) Reinforcement learning
   b) Supervised learning
   c) Unsupervised learning
   d) None of the above

8. Amazon had been working on a secret AI recruiting tool. The machine-learning specialists uncovered a big problem: their new recruiting engine did not like women. The system taught itself

that male candidates were preferable. It penalized resumes that included the word “women". This led to the failure of the tool. This is an example of

a) Data Privacy
b) AI access
c) AI Bias
d) Data Exploration

9. Which of the following is FALSE about Deep Learning and Machine Learning algorithms?

a. Deep Learning algorithms work efficiently on a high amount of data
b. Feature Extraction needs to be done manually in both ML and DL algorithms.
c. Deep Learning algorithms are best suited for unstructured data.
d. Deep Learning algorithms require high computational power.

10. An application lets you search what you see, get things done faster and understand the world around you – using just your camera or a photo. Which domain does this app belong to?

a) Natural Language Processing
b) Data Sciences
c) Computer Vision
d) Artificial Language Processing

11. A _____is divided into multiple layers and each layer is further divided into several blocks called nodes.

a. Neural Networks
b. Convolutional Neural Network (CNN)
c. Machine learning algorithm
d. Hidden Layers

12. What is the primary feature of high-level programming languages?

a) They are closer to machine code
b) They require a deep understanding of computer architecture
c) They are user-friendly and provide a higher level of abstraction from hardware
d) They are mainly used for developing operating systems

13. Which programming approach involves starting with a high-level overview and breaking it down into smaller sub-problems?

a) Bottom-Up Approach
b) Left-Right Approach
c) Top-Down Approach
d) Circular Approach

14. Which of the following is not a characteristic of procedural programming languages?

a) Focus on step-by-step execution of instructions
b) Emphasis on manipulating data using procedures
c) Promotes code reusability through inheritance and polymorphism
d) Efficient use of system resources

15. In object-oriented programming, what is the process of wrapping code and data together into a single unit called?

a) Polymorphism
b) Encapsulation
c) Inheritance
d) Abstraction

16. Which language is known for its platform independence thanks to its "write once, run anywhere" principle?

a) Python
b) C++
c) Java
d) JavaScript

ACTIVITY -TOP-DOWN AND BOTTOM UP PROBLEM SOLVING

Problem: Organize an event

- Scenario: You are the event manager and you need to breakdown the event into various activities / areas, so you can allocate the resources accordingly. You could start from top activities and break them down into smaller ones, or you could identify the smaller tasks first and group them into different areas, which become the top activities.
- Task:
- Draw diagrams and show the planning of this event, both in top-down and bottom-up scenarios. Discuss what was the best approach and why ?