# SIMATS ENGINEERING

**SAVEETHA INSTITUTE OF MEDICAL AND TECHNICAL SCIENCES**

**CAPSTONE PROJECT REPORT**

**PROJECT TITLE**

Online Auction System

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**COURSE CODE / COURSE NAME**

CSA0912-Programming in Java for Accessing Database

**ABSTRACT:**

The online auction system is a web-based platform designed to allow users to list items for auction, place bids, and track the progress of ongoing auctions. Administrators manage auction listings, verify bids, handle disputes, and generate detailed reports on auction activities. The system is built with a focus on secure transactions, real-time bid management, and a scalable architecture leveraging Amazon Web Services (AWS) for cloud storage, authentication, and database management. The solution ensures seamless user experience for bidders and administrators while adhering to robust data security practices.

**INTRODUCTION:**

In recent years, online auctions have gained popularity as a means of selling and purchasing goods. Traditional auction systems are transitioning to digital platforms, allowing greater reach, convenience, and real-time bid tracking. This project aims to develop an online auction system that caters to both users and administrators by providing a user-friendly interface and a secure backend. Users can register, list items, place bids, and track auction statuses. Administrators oversee auction processes, ensuring integrity in bid management and generating reports on auction outcomes and revenue. AWS is integrated for cloud storage, database management, and secure authentication to ensure scalability and robustness.

In addition to the core functionalities for users, administrators play a critical role in managing auctions. They verify bids, resolve disputes, update auction details, and generate reports to monitor the performance of the platform. This system is designed with scalability and cloud integration in mind, leveraging Amazon Web Services (AWS) for hosting, storage, and authentication. The use of AWS ensures that the system can handle high traffic, securely store auction data, and provide seamless user authentication.

The goal of this project is to design and implement an online auction system that facilitates seamless interactions between sellers and buyers. Sellers can list items for auction, providing descriptions and images, while buyers can place bids on the items of

interest. The system keeps track of the highest bids and notifies users when they have been outbid or when they win an auction. At the heart of this system is a secure and scalable infrastructure that ensures smooth operations while safeguarding user data.

## PROBLEM STATEMENT:

Managing online auctions with multiple users, real-time bids, and secure data handling presents significant challenges. Developing a system that facilitates smooth bidding, handles auction data securely, and enables administrators to verify bids and generate activity reports requires a well-architected backend integrated with a scalable cloud infrastructure. Additionally, ensuring secure user authentication and seamless auction progress tracking is essential to build trust in the system.

**OBJECTIVE:**

* Develop an intuitive interface for users to browse auction items, place bids, and view auction progress.
* Create a secure login and registration system using Applet.
* Enable auction administrators to manage auctions, verify bids, and handle disputes through a dedicated dashboard.
* Implement backend logic to handle bid placements, auction status updates, and email notifications.
* Use AWS services like RDS for database management, S3 for storing auction- related files, and Cognito for user authentication.
* Ensure the system is scalable, secure, and reliable, providing real-time feedback to users and administrators.
* Generate comprehensive reports on auction activities, item performance, and revenue.

## MATERIALS AND METHODS:

**Frontend Design:**

* UI Design: HTML, CSS, and JavaScript are used to create a responsive user interface for browsing items, placing bids, and tracking auction progress.
* Applet for Registration: Java Applet is used for secure user login and registration functionalities.
* User Dashboard: A user-friendly dashboard enables users to view their bid history, track auction progress, and receive notifications.
* Administrator Interface: Admin dashboard for managing auctions, verifying bids, and handling disputes.

## Backend Design:

* Database Management: AWS RDS is used to store data on auction items, bids, users, and transactions. MySQL or PostgreSQL can be used as the underlying database engine.
* Bid Management Logic: Backend logic for handling real-time bids, updating auction statuses, and verifying item information is implemented using Java or Python. Notification services are integrated to keep users updated on bid status.
* CRUD Operations: RESTful API services are created for managing auction data, bids, and user information.

## AWS Integration:

* AWS S3: Storing images of auction items and related documents.
* AWS Cognito: For secure user authentication and session management.
* AWS EC2/Elastic Beanstalk: Hosting the auction system to ensure scalability and load balancing.
* AWS RDS: A managed relational database service for secure storage and management of auction-related data.

## Reporting Module:

* Backend logic for generating detailed auction reports, item performance, and revenue analysis is built using Java or Python. Reports are generated and stored securely, with export options for administrators.

## CONCLUSION:

The development of an online auction system involves creating an intuitive and secure platform for users to bid on items and for administrators to manage auctions. Integrating AWS services ensures scalability, security, and reliability, while the use of Applet and modern web technologies offers a seamless user experience. The system enables real- time bid tracking, secure user authentication, and comprehensive reporting on auction activities, providing a complete solution for online auction management. This project showcases a robust cloud-based architecture with a user-centric design.

# CODE:

import javax.swing.\*; import java.awt.event.\*; import java.util.ArrayList; class Bid {

String bidderName; int amount;

public Bid(String bidderName, int amount) { this.bidderName = bidderName; this.amount = amount;

}

public String toString() {

return bidderName + " - $" + amount;

}

}

class AuctionItem { String itemName; int currentBid;

ArrayList<Bid> bidHistory;

public AuctionItem(String itemName, int currentBid) { this.itemName = itemName;

this.currentBid = currentBid; this.bidHis tory = new ArrayList<>();

}

public boolean (String bidderName, int bidAmount) { if (bidAmount > currentBid) {

currentBid = bidAmount;

bidHistory.add(new Bid(bidderName, bidAmount)); return true;

}

return false;

}

public void printBidHistory() { for (Bid bid : bidHistory) {

System.out.println(bid);

}

}

public String toString() {

return itemName + " | Current Bid: $" + currentBid;

}

}

class LoginSystem {

private String correctUsername = "admin"; private String correctPassword = "password123";

public boolean authenticate(String username, String password) { returnusername.equals(correctUsername)&&

password.equals(correctPassword);

}

}

public class OnlineAuctionSystem { ArrayList<AuctionItem> items; LoginSystem loginSystem;

public OnlineAuctionSystem() { items = new ArrayList<>();

items.add(new AuctionItem("Antique Vase", 100)); items.add(new AuctionItem("Rare Coin", 200));

loginSystem = new LoginSystem();

}

public void showLoginScreen() {

JFrame frame = new JFrame("Auction Login"); JTextField userNameField = new JTextField(15);

JPasswordField passwordField = new JPasswordField(15); JButton loginButton = new JButton("Login");

JPanel panel = new JPanel(); panel.add(new JLabel("Username:")); panel.add(userNameField); panel.add(new JLabel("Password:")); panel.add(passwordField); panel.add(loginButton); frame.add(panel);

loginButton.addActionListener(new ActionListener() { public void actionPerformed(ActionEvent e) {

String username = userNameField.getText();

String password = new String(passwordField.getPassword());

if (loginSystem.authenticate(username, password)) { frame.dispose();

showAuctionDashboard();

} else {

JOptionPane.showMessageDialog(frame,"Invalid credentials!");

}

}

});

frame.setSize(300, 150); frame.setDefaultCloseOperation(JFrame.EXIT\_ON\_CLOSE); frame.setVisible(true);

}

public void showAuctionDashboard() {

JFrame frame = new JFrame("Auction Dashboard"); DefaultListModel<String> listModel = new DefaultListModel<>();

for (AuctionItem item : items) { listModel.addElement(item.toString());

}

JList<String> auctionList = new JList<>(listModel); JButton placeBidButton = new JButton("Place Bid");

placeBidButton.addActionListener(new ActionListener() { public void actionPerformed(ActionEvent e) {

int selectedIndex = auctionList.getSelectedIndex(); if (selectedIndex != -1) {

String bidAmountStr = JOptionPane.showInputDialog("Enter

your bid:");

try {

int bidAmount = Integer.parseInt(bidAmountStr);

if (items.get(selectedIndex).placeBid("User",bidAmount)) {

listModel.set(selectedIndex, items.get(selectedIndex).toString());

JOptionPane.showMessageDialog(frame,"bidplaced

successfully!");

} else {

JOptionPane.showMessageDialog(frame,"Bidistoo

low!");

amount!");

}

} catch (NumberFormatException ex) { JOptionPane.showMessageDialog(frame,"Invalidbid

}

}

}

});

frame.add(new JScrollPane(auctionList), "North"); frame.add(placeBidButton, "South");

frame.setSize(400, 300); frame.setDefaultCloseOperation(JFrame.EXIT\_ON\_CLOSE); frame.setVisible(true);

}

public static void main(String[] args) {

OnlineAuctionSystem auctionSystem = new OnlineAuctionSystem(); auctionSystem.showLoginScreen();

}

}

# OUTPUT:

1. Antique Vase | Current Bid: $100
2. Rare Coin | Current Bid: $200 Enter your bid: 150

Bid placed successfully!

1. Antique Vase | Current Bid: $150
2. Rare Coin | Current Bid: $200 Enter your bid: 90

Bid is too low!

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