4. CREATE A WEB SERVICE FOR FINDING WHAT PEOPLE THINK

Here is the shortest Python code for the web service:

```
from flask import Flask, request, jsonify
import random

app = Flask(__name__)

@app.route('/opinion', methods=['POST'])
def get_opinion():
    opinions = [random.choice(["Positive", "Negative", "Neutral"]) for _ in range(500)]
    return jsonify({
        "positive_opinions": opinions.count("Positive"),
        "negative_opinions": opinions.count("Negative"),
        "neutral_opinions": opinions.count("Neutral")
    })

if __name__ == '__main__':
    app.run(debug=True)
```

3. VALIDATE THE FORM USING PHP

```
<?php
$conn = mysqli_connect("localhost", "username", "password", "database");
if ($_SERVER["REQUEST_METHOD"] == "POST")
{
   $name = $_POST["name"];
   $email = $_POST["email"];
   $password = $_POST["password"];
   if (preg_match("/^[a-zA-Z ]+$/", $name) &&
       preg_match("/^[a-zA-Z0-9._%+-]+@[a-zA-Z0-9.-]+\.[a-zA-Z]{2,}$/", $email) &&
           preg_match("/^(?=.*[a-z])(?=.*[A-Z])(?=.*\d)(?=.*[@$!%*?&])[A-Za-z\d@$!%*?&]{8,}$/", $password)) {
          $sql = "INSERT INTO users (name, email, password) VALUES ('$name', '$email', '$password')";
      mysqli_query($conn, $sql);
   }
}
mysqli_close($conn);
?>
```

2. CREATE XML DOCUMENT

```
import javax.xml.parsers.*;

import org.w3c.dom.*;


public class UserDetails {

  public static void main(String[] args) throws Exception {

                Document doc = DocumentBuilderFactory.newInstance().newDocumentBuilder().parse("users.xml");

                NodeList list = doc.getElementsByTagName("user");

   for (int i = 0; i < list.getLength(); i++) {

    Element elem = (Element) list.item(i);

            if (elem.getElementsByTagName("id").item(0).getTextContent().equals("1"))
{

                System.out.println("Name: " + elem.getElementsByTagName("name").item(0).getTextContent());

                System.out.println("Email: " + elem.getElementsByTagName("email").item(0).getTextContent());

    }

  }

 }

}
```

1. CREATE THREE TIER APPLICATIONS

```
import javax.servlet.*;
import java.sql.*;

public class ExamServlet extends HttpServlet {
  protected void doPost(HttpServletRequest req, HttpServletResponse resp) {
                String studentID = req.getParameter("studentID");
    String examID = req.getParameter("examID");

    try {
          Connection conn = DriverManager.getConnection("jdbc:mysql://localhost:3306/examdb", "root", "password");
              PreparedStatement pstmt = conn.prepareStatement("SELECT * FROM Exams WHERE StudentID = ? AND ExamID = ?");
      pstmt.setString(1, studentID);
      pstmt.setString(2, examID);

      ResultSet rs = pstmt.executeQuery();
      if (rs.next()) {
        int score = rs.getInt("Score");
        resp.getWriter().println("Score: " + score);
      }
    } catch (Exception e) {
          resp.getWriter().println("Error: " + e.getMessage());
    }
  }
}
```