Terna Engineering College
Computer Engineering Department

Program: Sem VIII

Course: Human Machine Interaction (HMI)

LAB Manual

PART A

(PART A : TO BE REFFERED BY STUDENTS)

Experiment No.02

A.1 Aim:

Create a Web based Mathematical application for kids of age of 4-7 years.

A.2 Prerequisite:

1. Knowledge of User Interface Designing.
2. Knowledge of Human Centered Design.

A.3 Outcome:

After successful completion of this experiment students will be able to

1. Ability to identify user's characteristics and design user centric interfaces or human centered design.

A.4 Theory:

- **The world of interface design :**

The journey into the world of interface design and the screen design process must begin with an understanding of the system user, the most important part of any computer system. Understanding people and what they do is a difficult and often undervalued process but very critical because of the gap in knowledge, skills, and attitudes existing between system users and developers that build them.

To create a truly usable system, the designer must always do the following:

- Understand how people interact with computers.
- Understand the human characteristics important in design.
- Identify the user's level of knowledge and experience.
- Identify the characteristics of the user's needs, tasks, and jobs.
- Identify the user's psychological characteristics.
- Identify the user's physical characteristics.
- Employ recommended methods for gaining understanding of users.

A.5 Procedure:

1. Think of the user as it is the application for kids aging 4-7 years.
2. Their mindset, interest, what they feel interesting for learning, keeping in mind creates an application which will teach them about mathematics i.e.
    - Reading numbers
    - Counting
    - addition and subtraction

3. **Example:**

Part B

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Date of Experiment:	Date of Submission:
Grade:	

B.1 Tools used to develop application:

Virtual Studio Code

B.2 Choice of User Interface Elements:

Input Form, Buttons, Images.

B.3 Sample Source code of application:

index.html

```
<html>
<head lang="en">
<meta charset="UTF-8">
<title> Quiz for kids </title>
<link rel="stylesheet" type="text/css" href="style.css">
</head>

<body>
<div class="grid">
<div id="quiz">
<h1>Name 3D Shape</h1>
<hr style="margin-bottom: 20px">
<p id="question"> </p>

<div class="button">
<button id="bt0"> <span id="choice0"> </span> </button>
<button id="bt1"> <span id="choice1"> </span> </button>
<button id="bt2"> <span id="choice2"> </span> </button>
<button id="bt3"> <span id="choice3"> </span> </button>

</div>

<hr style="margin-top: 30px">
```

```
<footer>
<p id="progress"> Question x of y</p>
</footer>
</div>
</div>

<script src="quiz.js"> </script>
<script src="question.js"> </script>
<script src="app.js"> </script>

</body>
</style>
</html>
```

style.css

```
body {
background-color: #eeeeee;
background-image: url('./kids.jpg');
background-repeat: no-repeat;
background-size: cover;
}

.grid {
width: 700px;
height: 650px;
margin: 0 auto;
background-color: #fff;
padding: 10px 50px 50px 50px;
border-radius: 50px;
border: 2px solid #cbcbcb;
box-shadow: 10px 15px 5px #cbcbcb;
}

.grid h1 {
font-family: "sans-serif";
background-color: #2c0747;
font-size: 60px;
text-align: center;
color: #ffffff;
padding: 2px 0px;
border-radius: 50px;
}
```

```
#score {
color: #5A6772;
text-align: center;
font-size: 30px;
}

.grid #question {
font-family: "monospace";
font-size: 30px;
color: #5A6772;
text-align: center;
}


.buttons {
margin-top: 30px;
}

#bt0, #bt1, #bt2, #bt3 {
background-color: #510b84;
width: 250px;
font-size: 25px;
color: #fff;
border: 1px solid #1D3C6A;
border-radius: 50px;
margin: 10px 95px 20px 0px;
padding: 10px 15px;
}

#bt0:hover, #bt1:hover, #bt2:hover, #bt3:hover {
cursor: pointer;
background-color: #2c0747;
}

#bt0:focus, #bt1:focus, #bt2:focus, #bt3:focus {
outline: 0;
}

#progress {
color: #2b2b2b;
font-size: 18px;
}
```

quiz.js

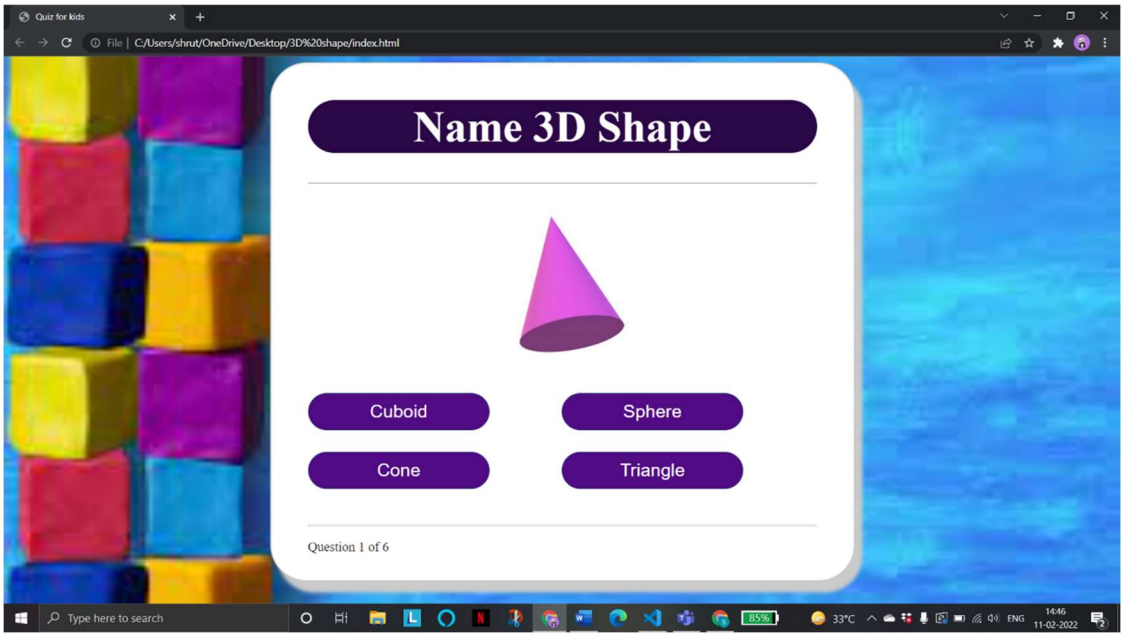
```
function Quiz(questions) {
    this.score = 0;
    this.questions = questions;
    this.questionIndex = 0;
}

Quiz.prototype.getQuestionIndex = function() {
    return this.questions[this.questionIndex];
}

Quiz.prototype.guess = function(answer) {
    if(this.getQuestionIndex().isCorrectAnswer(answer)) {
        this.score++;
    }

    this.questionIndex++;
}

Quiz.prototype.isEnded = function() {
    return this.questionIndex === this.questions.length;
}
```

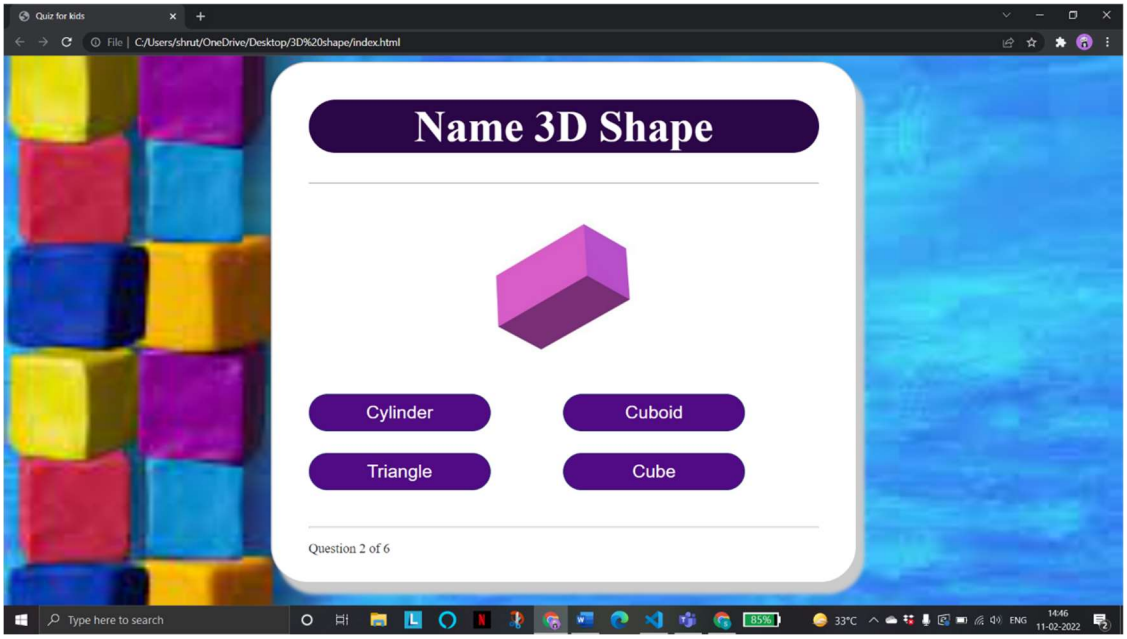
app.js

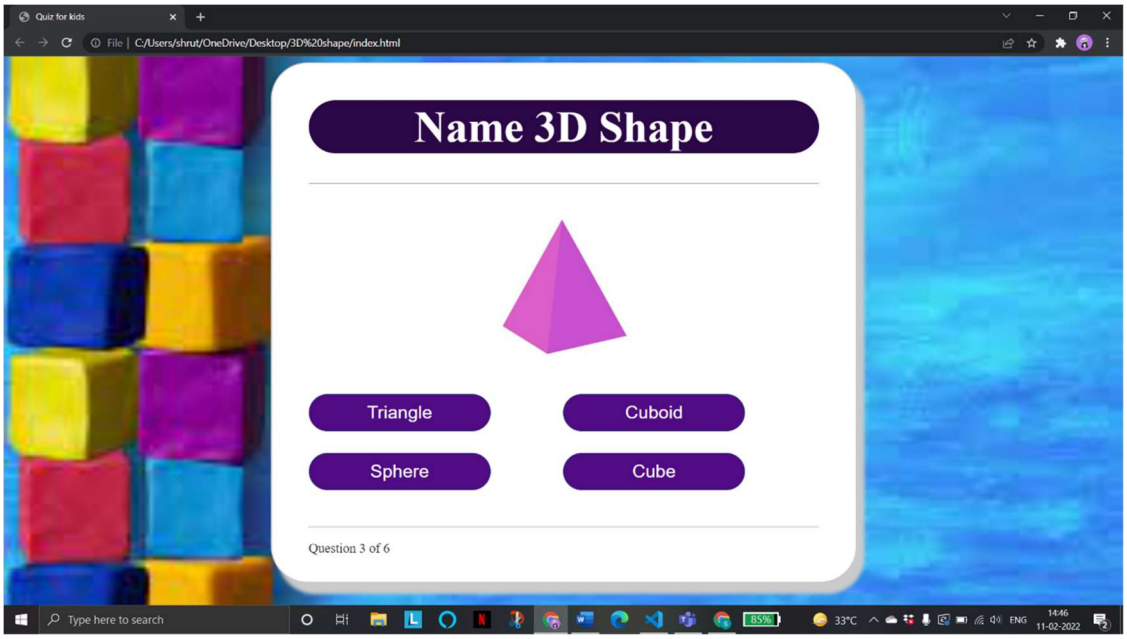
```
function populate() {
    if(quiz.isEnded()) {
        showScores();
    }
    else {
        // show question
        var element = document.getElementById("question");
        element.innerHTML = quiz.getQuestionIndex().text;

        // show options
        var choices = quiz.getQuestionIndex().choices;
        for(var i = 0; i < choices.length; i++) {
            var element = document.getElementById("choice" + i);
            element.innerHTML = choices[i];
            guess("bt" + i, choices[i]);
        }

        showProgress();
    }
```

```
};

function guess(id, guess) {
    var button = document.getElementById(id);
    button.onclick = function() {
        quiz.guess(guess);
        populate();
    }
};


function showProgress() {
    var currentQuestionNumber = quiz.questionIndex + 1;
    var element = document.getElementById("progress");
    element.innerHTML = "Question " + currentQuestionNumber + " of " +
quiz.questions.length;
};

function showScores() {
    var gameOverHTML = "<h1>Result</h1>";
    gameOverHTML += "<h2 id='score'> Your score is: " + quiz.score + "</h2>";
    var element = document.getElementById("quiz");
    element.innerHTML = gameOverHTML;
};
var questions = [
    new Question(" <img src = 'cone.jpg'/> ", ["Cuboid", "Sphere","Cone", "Triangle"],
"Cone"),

    new Question(" <img src = 'cuboid.jpg'/> ", ["Cylinder", "Cuboid","Triangle",
"Cube"], "Cuboid"),

    new Question(" <img src = 'triangle.jpg'/> ", ["Triangle", "Cuboid","Sphere",
"Cube"], "Triangle"),

    new Question(" <img src = 'sphere.jpg'/> ", ["Cylinder", "Sphere","Triangle",
"Cone"], "Sphere"),

    new Question(" <img src = 'cylinder.jpg'/> ", ["Cylinder", "Cone","Triangle",
"Sphere"], "Cylinder"),

    new Question(" <img src = 'cube.jpg'/> ", ["Cuboid", "Cone","Triangle", "Cube"],
"Cube")
];
var quiz = new Quiz(questions);
populate();
```

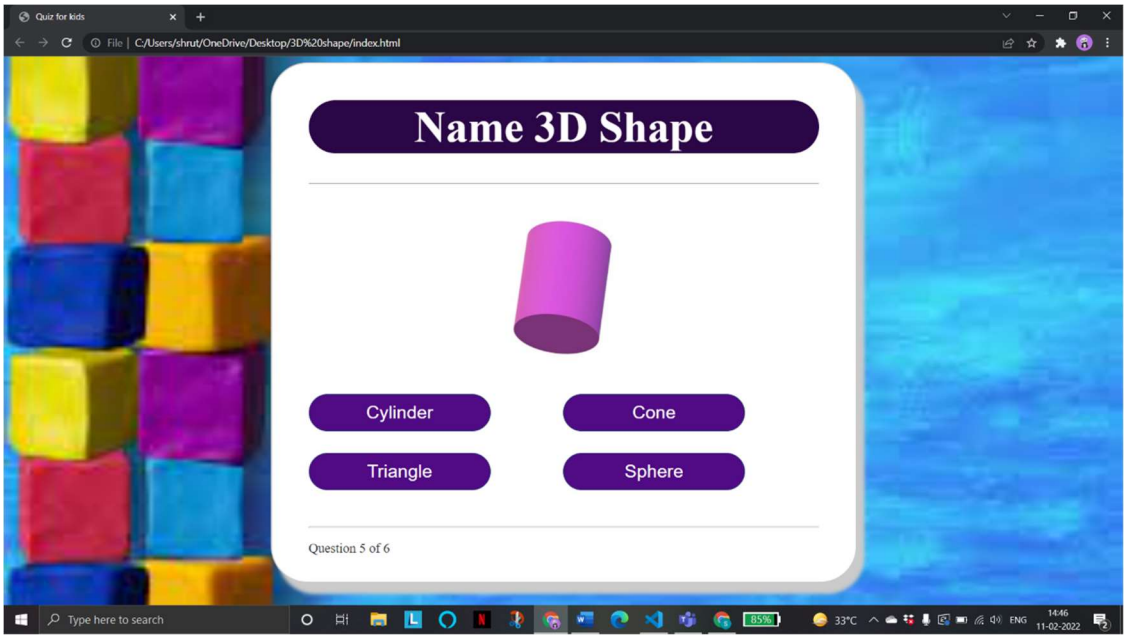
B.4 User Interface Designs:

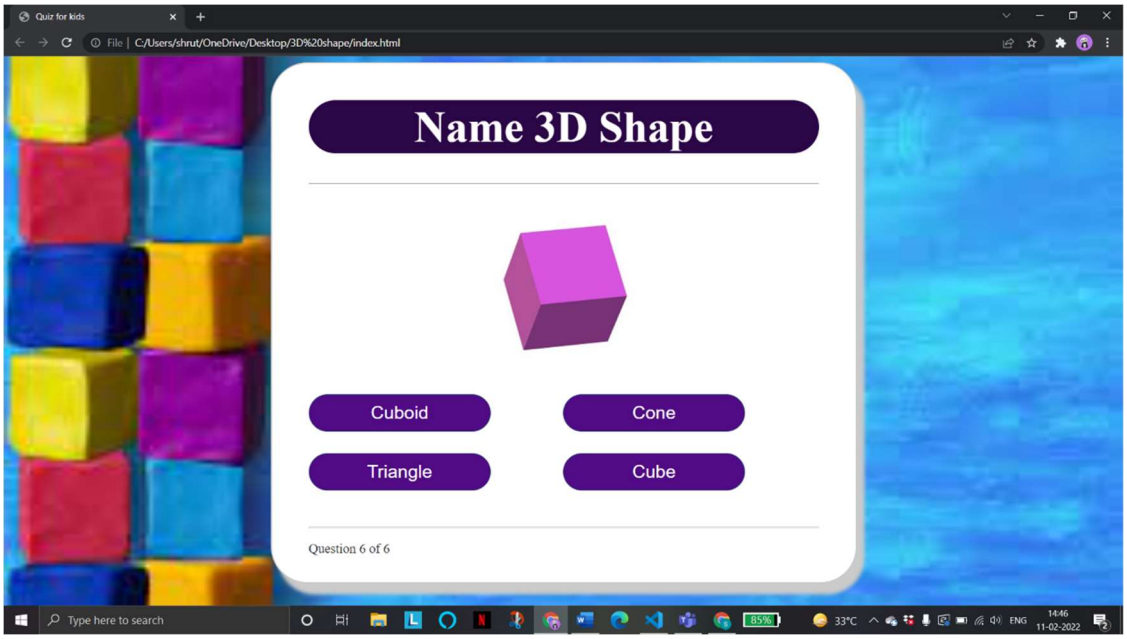


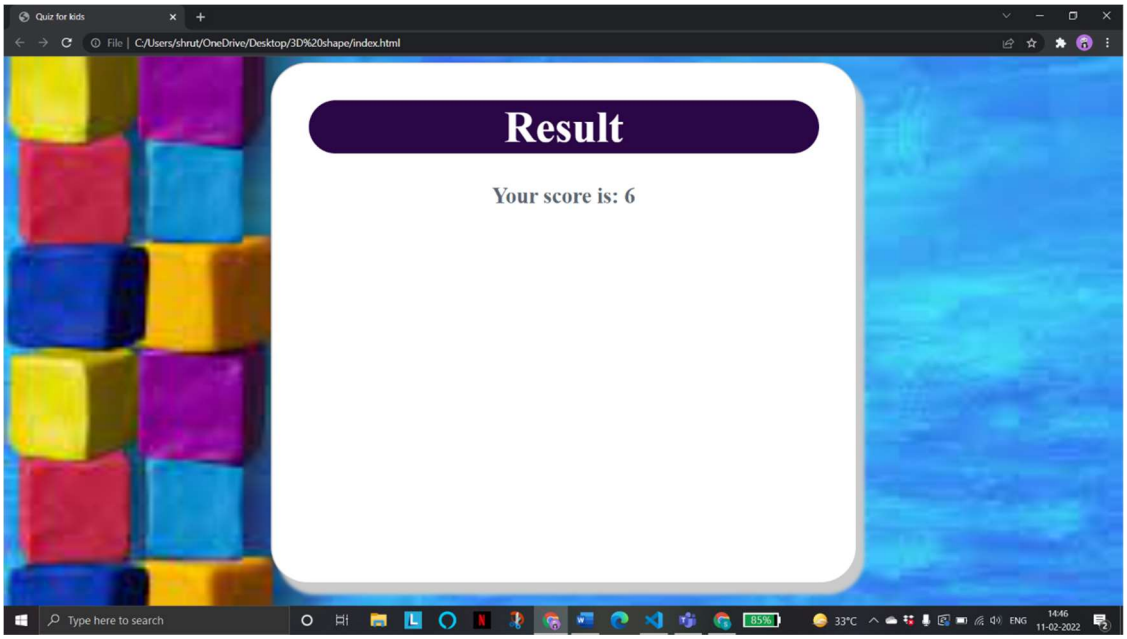



Quiz for kids
File | C:/Users/shrut/OneDrive/Desktop/3D%20shape/index.html
Name 3D Shape
Triangle
Cuboid
Sphere
Cube
Question 3 of 6
Type here to search
33°C
ENG
14:46
11-02-2022


Quiz for kids
File | C:/Users/shrut/OneDrive/Desktop/3D%20shape/index.html
Name 3D Shape
Cylinder
Sphere
Triangle
Cone
Question 4 of 6
Type here to search
33°C
ENG
14:46
11-02-2022


Quiz for kids
File | C:/Users/shrut/OneDrive/Desktop/3D%20shape/index.html
Name 3D Shape
Cylinder
Cone
Triangle
Sphere
Question 5 of 6
Type here to search
85%
33°C
ENG
14:46
11-02-2022


Quiz for kids
File | C:/Users/shrut/OneDrive/Desktop/3D%20shape/index.html
Name 3D Shape
Cuboid
Cone
Triangle
Cube
Question 6 of 6
Type here to search
85%
33°C
ENG
14:46
11-02-2022



B.5 Conclusion:

Hence, I would like to conclude that in this practical we developed a web based Mathematical application for kids to name the 3-dimensional shape.