INSTITUTE OF INFORMATION TECHNOLOGY
JAHANGIRNAGAR UNIVERSITY

Report on Attachment of ICT usage as observed during visit to Industry/Business Enterprise.

Company Name: Nascenia

Date of the visit: 14 August, 2022

Submitted by:

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DECLARATION

This industrial tour report is submitted to the Institute of Information Technology, Jahangirnagar University, Savar, Dhaka in partial fulfillment of the requirements for having the B.Sc (Hons.) degree in ICT. This is also needed to certify that the project work is under the 3rd Year 1st Semester course of the IIT "ICT-3100: Special Study/Industrial Attachment and Viva". So, we are here declaring that this project report has not been submitted elsewhere for the requirement of any kind of degree, diploma or publication.

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ACCEPTANCE

This industrial tour report is submitted to the Institute of Information Technology, Jahangirnagar University, Savar, Dhaka in partial fulfillment of the requirements for having the B.Sc (Hons.) degree in Information and Communication Technology.

Fahima Tabassum
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ACKNOWLEDGEMENTS

First of all we would like to thank the Almighty for giving us the opportunity to complete this work successfully. Our acknowledgement is meant to express our sincere gratitude to all those people who have been associated with this project and have helped us with it and by sharing their experiences and valuable opinions through which we received the required information crucial for our project. We are thankful to our parents for their relentless support. Most importantly we are grateful to our honourable supervisor who took time out to guide us and provide us with all the necessary materials and sufficient knowledge that was the major requirement.

Finally, we convey our regards to our honourable teacher **Professor Fahima Tabassum.** Sir for giving us the opportunity to learn the subject particularly practically.

CONTENTS

Chapter 1

INTRODUCTION

1.1 What is Nascenia?

The Institute of Information Technology, Jahangirnagar University managed an industrial visit tour to Nascenia located at House 6/14, Lalmatia, Dhaka. Shaer Hasan CEO and Fattahul Alam CTO of Nascenia company is familiar with us as they attended a seminars in their Institute. So, we thought that it would be helpful for us to visit his company.

Nascenia is a privately held company providing software solutions worldwide. The company was formed in 2011. It has operations in over 110 countries and 110 project and employs over 40 employees. The company has been working with Bangladesh, India, Hong Kong, USA, UK and Japan. The major development center is in Bangladesh and USA.[1]

1.2 Goals of Industrial Tour

- Gain hands-on experience of how industry operations are executed.
- Eradicating gap between theoretical training and practical learning in real life environment.
- Gain opportunity for active/interactive learning experiences in-class as well as outside the classroom environment.
- Identify prospective areas of work in the overall organizational function.
- Develop interpersonal skills and communication techniques.
- Breading outlook of students with exposure to different workforces from different industries.

1.3 Office Information

Nascenia is a software development company. They build custom web and mobile applications for different companies in this world. As they are located in Dhaka, Bangladesh they can offer competitive pricing with great skilled software resources. Although Nascenia can be your outsourcing partner, they have some differences over many other outsourcing partners. They are one of the very best companies in Bangladesh, hire the most talented engineers from the country and has been working with different North American and European companies since their incorporation.
Nascenia is an expert in Ruby on Rails and mobile application development for Android and iOS. They also have a strong team in PHP and .net framework. Recently, they started working with blockchain technology. If you want to implement an idea into a software product or if you already have an existing product that needs further development, you can get in touch with them. [2]

1.4 Location

House 6/14,
Block A,
Lalmatia, Dhaka-1207.

1.5 Services

Nascenia Is an Award-Winning Software Company Working for European and North American Clients.

Some of Nascenia services are provided blew:

Web Development:

- Ruby on Rails
- PHP
- .Net
- AngularJS, ReactJS
- NodeJS
- Magento

Mobile Development:

- Android
- iOS
- Hybrid

UI/UX Design:

- Requirement Generation
- Wireframing
- Design for Web and Mobile

Cutting Edge:

- Blockchain
- IBM Watson

- Facial Recognition
- Big Data
- Natural Language Processing
- Machine Learning

Quality Assurance (QA):

- Requirement Visualization
- Functional Testing
- Performance Engineering
- Security Testing
- Automation Engineering

Cyber Security:

- Web application vulnerability assessment
- Mobile app security testing
- Firewall security assessment
- Network penetration testing
- Server side assessment
- Malware defense testing

DevOps:

- Amazon AWS
- Linode
- Microsoft Azure

1.6 Some of Nasceina's Prized Software Solutions:

- Mobile Application for Transparency International Bangladesh
- Litra
- Welltravel
- Business for Peace Foundation
- BrokerPro
- COVID Data Warehouse & Dashboard

1.7 Awards:

- Asia Red Hiring 100 winner
- Asia's Premier ICT event 2011

Chapter 2

LEARNING

2.1 Learning Method

Firstly, we had gone there and survey the office work. After surveying office work they had taken us to their interview room and asked us to question them about their work. We had asked various question like antivirus based question, about their recent project etc. After this interviewing part we were taken to their seminar room. Then they described their different working process.

2.2 Achievements

- About Web development
- About Mobile-App development
- About Git-Hub
- About Cyber Security
- About UI/UX Design
- About Quality Assurance (QA)

2.3 The day-long schedule for the program is as below

Sl.	Activity	Time
1	Introductory session	09:30 - 10:15
	Self intoduction	
	Company overview	
	Development work process in Nascenia	
2	Workshop, evaluation, & problem briefing	10:15 - 13:00
	Group member selection	
	Development environment setup	
	Describe Github flow	
	Problem briefing	
	Development of the software	
3	Prayer & lunch	13:00 - 14:00
4	Continuation of development of the software	14:00 - 15:00
5	Evaluation of the development work	15:00 - 16:00
6	Closing ceremony & QA	16:00 - 17:00

2.4 Confirmation

The nominated students from the Institute of Information Technology of Jahangirnagar University attended the day-long workshop at Nascenia on 14th August 2022, and successfully completed.

Group No	Roll No	Name	Students Attendance	Supervisor from JU
8	2023	Md. Shakil Hossain	√	**Prof. Fahima Tabassum** Institute of Information Technology(IIT) Jahangirnagar University, Savar, Dhaka
	2024	Mahbubur Rahman	√	
	2028	Md. Nahidul Islam	√	
	2022	Asfaqur Rahman Tokee	√	

2.5 Assigned Task

Assignment: Snake game

Description: You are given a boiler-plate snake game project implemented in HTML, JavaScript, and CSS. Some basic level features are already developed there, your task is to implement some new features on top of the basic ones. Please find the following details for further clarifications. [3]

Basic features present in the initial app:

1. A 300X300 px canvas which is divided into 30X30 cells (each cell = 10 px)
2. An apple is placed in the (0, 0) position.
3. A snake (size = 3) that can move within the board and can change its direction with the arrow keys.
4. The game will be started by pressing the Start button.
5. If the snake hits the border of the grid, then the game will be over. 6. Some initial setups are given for future use and a Text div to display the current score.

Challenges:

1. The snake's "head cell" color should be different from other cells.

2. If the snake eats the apple then the apple should be placed in any other random position. And the score should be increased by 1. An updated score should be displayed in the score div.

3. After eating an apple, the snake size should be increased by 1 cell.

4. There should be a restart button. If the restart button is pressed, everything should be reset to initial mode, and the game should be restarted.

5. If the "Circular way checkbox is checked before pressing the start button, then the snake should move through the wall in a circular way and eat food.

6. If "Killed by hitting itself" is selected then the snake should get killed by hitting itself.

7. If "Snake body removed from bitten point" is checked then the remaining body part from the hitting spot should disappear and the snake should survive and continue.

8. The snake food should appear in 2 different ways, the regular and some boosted food versions. For the boosted version, the food should appear randomly like regular but with a bit large size and will disappear after 5 seconds of its appearance. If the snake eats the booster apple then the score should be increased by 5

9. The speed of the snake will change with the number of apples eaten.

10. There should be a Life system, so let's say a snake will have 3 life, so it can die 3 times before the game is over. There will be a random life spawning like the other "food", but instead of increasing snake length, it will add life up to say 9 or 99.

11. The Snake's initial position should be random with every time starts.

12. There should be some walls those are randomly appear in the game starting time and if the snake hits the wall, then its life should be decreased by 1.

13. There should be multi-level functionality. After eating a certain amount of food, there should appear a door with 3 cells in any of the positions in the grid, and if the snake passes through the door, then the level should be increased and the wall position should be changed.

Chapter 3

METHODOLOGY

3.1 Project Name

JavaScript-Snake-Game

3.2 Component

HTML

HTML is a hypertext markup language that is in reality a backbone of any website. Every website can’t be structured without the knowledge of HTML. If we make our web page only with the help of HTML, then we can’t add many of the effective features in a web page, for making a web page more effective we use various platforms such as CSS. So here we are using this language to make our web pages more effective as well as efficient. And to make our web pages dynamic we are using Javascript.[4]

CSS

CSS Stands for "Cascading Style Sheet." Cascading style sheets are used to format the layout of Web pages. They can be used to define text styles, table sizes, and other aspects of Web pages that previously could only be defined in a page's HTML. The basic purpose of CSS is to separate the content of a web document (written in any markup language) from its presentation (that is written using Cascading Style Sheets). There are lots of benefits that one can extract through CSS like improved content accessibility, better flexibility moreover, CSS gives a level of control over various presentation characteristics of the document. It also helps in reducing the complexity and helps in saving overall presentation time. CSS gives the option of selecting various style schemes and rules according to the requirements and it also allows the same HTML document to be presented in more than one varying style.[5]

JAVA SCRIPT

JavaScript is considered to be one of the most famous scripting languages of all time. JavaScript, by definition, is a Scripting Language of the World Wide Web. The main usage of JavaScript is to add various Web functionalities, Webform validations, browser detections, creation of cookies, and so on. JavaScript is one of the most popular scripting languages and that is why it is supported by almost all web browsers available today like Firefox, We used the browser Opera or Internet Explorer. JavaScript is considered to be one of the most powerful scripting languages in use today. It is often used for the development of client-side web development. JavaScript is used to make web pages more interactive and dynamic. JavaScript is a lightweight programming language and it is embedded directly into the HTML code. JavaScript, as the name suggests, was influenced by many languages, especially Java. [6]

3.3 Code of Snake Game

HTML Code

```
<!DOCTYPE html>
<html>
  <head>
    <title>Snake Game</title>
    <link rel="icon" type="image/x-icon" href="/images/favicon-icon.png">
    <script src="snake.js"></script>
  </head>

  <body>

    <div class="div-common start-div">
      <button class="start" onclick="init();">Start</button>
    </div>
    <div class="div-common">
      <input type="checkbox" id="circular-way" name="circular-way" value="circular-way">
      <label for="circular-way">Circular way</label>
    </div>
    <div class="div-common">
      <input type="radio" id="killed-by-hitting-itself" name="self-hit-beaviour" value="killed-
by-hitting-itself">
      <label for="killed-by-hitting-itself">Killed by hitting itself</label>
      <input type="radio" id="snake-body-disappear" name="self-hit-beaviour" value="snake-
body-dissapear">
      <label for="snake-body-disappear">Snake body removed from bitten point</label>
    </div>
    <div class="div-common canvas-div">
      <canvas id="myCanvas" width="300" height="300"></canvas>
    </div>
    <div class="div-common score-div">
      <b style="color: #042303;">Score:   <span id="score">0</span></b>
    </div>
  </body>
</html>
```

CSS Code

```
        body {
    margin-top: 7.5%;
}

canvas {
    background: black
}

.div-common {
    display: flex;
    align-items: center;
    justify-content: center;
    padding: 5px;
}

.canvas-div {
    margin-bottom: 15px;
}

.start {
    font-size: 18px;
    color: #084905;
    border-color: #11850d;
    background: transparent;
    border-radius: 5px;
}

.start-div {
    margin-top: 5%;
    margin-bottom: 5px;
```

Javascript Code

```
let canvas;
let canvasContext;
let scoreSpan;
let circularWay;
let killedByHittingItself;
let snakeBodyDisappear;

let appleImage;
let bodyImage;

let apple = {
   x: 0,
   y: 0,
};

let snake = {
   x: [],
   y: [],
   size: 3
};

let leftDirection = false;
let rightDirection = true;
let upDirection = false;
let downDirection = false;
let inGame = true;

const DELAY = 140;
const MAX_RAND = 29;
const CELL_SIZE = 10;
const CANVAS_WIDTH = 300;
const CANVAS_HEIGHT = 300;

const LEFT_KEY = 37;
const RIGHT_KEY = 39;
const UP_KEY = 38;
const DOWN_KEY = 40;

function init() {

   circularWay = document.getElementById('circular-way').checked;
   killedByHittingItself = document.getElementById('killed-by-hitting-itself').checked;
   snakeBodyDisappear = document.getElementById('snake-body-disappear').checked;
```

```
   if(circularWay) {
      // write the  code here
   }
   if(killedByHittingItself) {
      // write the  code here
   }
   if(snakeBodyDisappear) {
      // write the  code here
   }

   canvas = document.getElementById('myCanvas');
   canvasContext = canvas.getContext('2d');
   scoreSpan = document.getElementById("score");

   loadImages();
   createInitialSnakePosition();
   locateApple();
   setTimeout("gameCycle()", DELAY);
}

function loadImages() {

   bodyImage = new Image();
   bodyImage.src = 'images/body.png';

   appleImage = new Image();
   appleImage.src = 'images/apple.png';
}

function doDrawing() {

   clearCanvas();

   if (inGame) {
      drawApple();
      drawSnake();
   } else {
      gameOver();
   }
}

function createInitialSnakePosition() {

   for (let z = 0; z < snake.size; z++) {
      snake.x[z] = 50 - z * CELL_SIZE;
      snake.y[z] = 50;
   }
```

```
}

function clearCanvas() {
   canvasContext.clearRect(0, 0, CANVAS_WIDTH, CANVAS_HEIGHT);
}

function drawApple() {
   canvasContext.drawImage(appleImage, apple.x, apple.y);
}

function drawSnake() {
   for (let z = 0; z < snake.size; z++) {
      canvasContext.drawImage(bodyImage, snake.x[z], snake.y[z]);
   }
}

function gameOver() {
   canvasContext.fillStyle = 'white';
   canvasContext.textBaseline = 'middle';
   canvasContext.textAlign = 'center';
   canvasContext.font = 'normal bold 18px serif';

   canvasContext.fillText('Game over', CANVAS_WIDTH/2, CANVAS_HEIGHT/2);
}

function locateApple() {
   // You have to write code here to place the apple in different position in the canvas
}

function checkApple() {
   // You have to check here whether the apple is eaten by the snake or not
}

function checkCollision() {

   if (snake.y[0] >= CANVAS_HEIGHT) {
      inGame = false;
   }

   if (snake.y[0] < 0) {
     inGame = false;
   }

   if (snake.x[0] >= CANVAS_WIDTH) {
    inGame = false;
   }
```

```
    if (snake.x[0] < 0) {
      inGame = false;
    }
}

onkeydown = function(e) {

    let key = e.keyCode;

    if ((key == LEFT_KEY) && (!rightDirection)) {

        leftDirection = true;
        upDirection = false;
        downDirection = false;
    }

    if ((key == RIGHT_KEY) && (!leftDirection)) {

        rightDirection = true;
        upDirection = false;
        downDirection = false;
    }

    if ((key == UP_KEY) && (!downDirection)) {

        upDirection = true;
        rightDirection = false;
        leftDirection = false;
    }

    if ((key == DOWN_KEY) && (!upDirection)) {

        downDirection = true;
        rightDirection = false;
        leftDirection = false;
    }
}

function move() {

    for (let z = snake.size; z > 0; z--) {
        snake.x[z] = snake.x[(z - 1)];
        snake.y[z] = snake.y[(z - 1)];
    }

    if (leftDirection) {
        snake.x[0] -= CELL_SIZE;
```

```
    }

    if (rightDirection) {
        snake.x[0] += CELL_SIZE;
    }

    if (upDirection) {
        snake.y[0] -= CELL_SIZE;
    }

    if (downDirection) {
        snake.y[0] += CELL_SIZE;
    }
}

function gameCycle() {

    if (inGame) {

        checkApple();
        checkCollision();
        move();
        doDrawing();
        setTimeout("gameCycle()", DELAY);
    }
}
```

Chapter 4

CONCLUSION

4.1 Conclusion:

Theoretical knowledge is not enough for making a good professional career. Industrial tour has made us more practical and capable of job sectors. It has sensitized us to the practical challenges that organizations face in the technical world. Industrial visit has also given us greater clarity about various technical concepts as we can practically see how these concepts are put into action. It provided us an opportunity to learn practically through interaction, working methods and employment practices. By combining the experience from this tour along with our academic learning, we will try to make our professional life better. We extend our heartiest thanks to Nascenia, especially Fattahul Alam CTO of Nascenia for making 14 August 2022 a day to cherish for some of lucky students like us who are honored with his humble gesture to get an opportunity to visit such an esteemed organization.

REFERENCES

[1]"About - A Software Outsourcing Company | Nascenia", *Ruby on Rails, Mobile And Web Applications Outsourcing Expert | Nascenia*, 2022. [Online]. Available: https://nascenia.com/about/. [Accessed: 27- Sep- 2022].

[2]"A Software Outsourcing Company | Nascenia", *Ruby on Rails, Mobile And Web Applications Outsourcing Expert | Nascenia*, 2022. [Online]. Available: https://nascenia.com/about/. [Accessed: 27- Sep- 2022].

[3]"A boiler-plate snake game project implemented in HTML, JavaScript, and CSS", *GitHub*, 2022. [Online]. Available: https://github.com/shakiliitju/Snake-game-boiler-plate. [Accessed: 27- Sep- 2022].

[4]"Home", *Html.com*, 2022. [Online]. Available: https://html.com/. [Accessed: 25- Mar 2022].

[5]"CSS", *W3schools.com*, 2022. [Online]. Available: https://www.w3schools.com/css/css_intro.asp. [Accessed: 25- Mar- 2022].

[6]"JavaScript", *Javascript.com*, 2022. [Online]. Available: https://www.javascript.com/. [Accessed: 22- Mar- 2022].