**Terna Engineering College**

**Computer Engineering Department**

Program: Sem VIII

**Course: Human Machine Interaction (HMI)**

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**LAB Manual**

**PART A**

(PART A: TO BE REFFERED BY STUDENTS)

**Experiment No.04**

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| **A.1** | **Aim:** |
|  | Design interface for automated ticket vending machine (**ATVM**) for Metro train. |
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| **A.2** | **Prerequisite:**   1. Knowledge of GUI and HMI principles. 2. Knowledge of Human Machine Interaction style. |
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| **A.3** | **Outcome:** |
|  | **After successful completion of this experiment students will be able to**   1. Visualize and apply HMI Principles to design good GUI. 2. Apply color, vision and memory based principles to design GUI. |
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| **A.4** | **Theory:** |
|  | * **GUI** * In computing, a **graphical user interface** (**GUI**, commonly pronounced *gooey*) is a type of user interface that allows users to interact with electronic devices with images (graphics) rather than text commands. * A GUI represents the information and actions available to a user through graphical icons and visual indicators such as secondary notation, as opposed to text-based interfaces, typed command labels or text navigation. * The actions are usually performed through direct manipulation of the graphical elements. * **HMI Principles** * Aesthetically Pleasing * Availability * Clarity * Compatibility * Configurability * Consistency * Control * Directness * Efficiency * Familiarity * Flexibility * Forgiveness * Operability * Perceptibility * Predictability * Recovery * Responsiveness * Safety * Simplicity * Transparency * Trade-offs * Visibility * **Automatic Ticket Vending Machine(ATVM)**  1. A **ticket machine**, also known as a **Ticket Vending Machine** (TVM), is a **vending machine** that produces tickets. For instance, **ticket machines** Dispense train tickets at railway stations. 2. The typical transaction consists of a user using the display interface to select the type and quantity of tickets and then choosing a payment method of either [cash](https://en.wikipedia.org/wiki/Cash), [credit](https://en.wikipedia.org/wiki/Credit_card)/[debit card](https://en.wikipedia.org/wiki/Debit_card) or [smartcard](https://en.wikipedia.org/wiki/Smart_card). 3. The ticket or tickets are printed and dispensed to the user. |
| **A.5** | **Procedure:**   1. Design interface for automated ticket vending machine (ATVM) for metro train. 2. This interface should contain necessary icons, pictures, and buttons   Think about the following.   * Think about the alternatives. * Think of Illiterate consumers. * Use creativity. * Can you use sound as interface.   **Example: Sample First Screen of ATVM** |

**PART B**

(PART B: TO BE COMPLETED BY STUDENTS)

***(Students must submit the soft copy as per following segments within two hours of the practical. The soft copy must be uploaded on the ERP or emailed to the concerned lab in charge faculties at the end of the practical in case the there is no ERP access available)***

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| Roll No.: 61 | Name: Sangita Toppo |
| Class: Comps\_BE \_ A | Batch: A3 |
| Date of Experiment: | Date of Submission: |
| Grade: |  |

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| **B.1** | **Tools used to design Interface:** |
|  | **import tkinter as tk**  **from tkinter import \***  **root= tk.Tk()**  **root.title('Automated ticket vending machine (ATVM)')**  **canvas1 = tk.Canvas(root, width = 1700, height = 800, relief = 'raised')**  **canvas1.configure(bg='gold')**  **canvas1.pack()**  **bg = PhotoImage(file = "l4.png")**  **filename=PhotoImage(file="l4.png")**  **background\_label=Label(root,image=filename)**  **background\_label.place(x=0,y=10,relwidth=1,relheight=1)**  **background\_label.configure(bg='black')**  **canvas1.pack()**  **label1 = tk.Label(root, text='Automated ticket vending machine')**  **label1.config(font=('helvetica', 13))**  **label1.configure(bg='white')**  **canvas1.create\_window(1200, 350, window=label1)**  **def getSquareRoot1 ():**  **label4 = tk.Label(root, text= 'Collect your Season Ticket ', bg='white', fg='black',font=('helvetica', 20, 'bold'))**  **canvas1.create\_window(800, 300, window=label4)**  **def getSquareRoot2 ():**  **label3 = tk.Label(root, text= 'Collect your Platform Tiket ', bg='white', fg='black',font=('helvetica', 20, 'bold'))**  **canvas1.create\_window(800, 300, window=label3)**  **def getSquareRoot3 ():**  **label5 = tk.Label(root, text= 'collect you are monthly pass ', bg='white', fg='black',font=('helvetica', 20, 'bold'))**  **canvas1.create\_window(800, 300, window=label5)**  **def getSquareRoot4 ():**  **label6 = tk.Label(root, text= 'collect your local ticket ', bg='white', fg='black',font=('helvetica', 20, 'bold'))**  **canvas1.create\_window(800, 300, window=label6)**  **def getSquareRoot5 ():**  **label7 = tk.Label(root, text= 'plz select you Ticket type acording\n to your destination',bg='white', fg='black',font=('helvetica', 20, 'bold'))**  **canvas1.create\_window(800, 300, window=label7)**  **def getSquareRoot ():**  **label8 = tk.Label(root, text= 'collect you are mob Ticket ', bg='white', fg='black',font=('helvetica', 20, 'bold'))**  **canvas1.create\_window(800, 300, window=label8)**    **button1 = tk.Button(text='print mob Ticket', command=getSquareRoot, bg='white', fg='black', font=('helvetica', 14, 'bold'))**  **canvas1.create\_window(1000, 400, window=button1)**  **button2 = tk.Button(text=' Season Ticket ', command=getSquareRoot1, bg='white', fg='black', font=('helvetica', 14, 'bold'))**  **canvas1.create\_window(1200, 400, window=button2)**  **button3 = tk.Button(text='Platform Ticket ', command=getSquareRoot2, bg='white', fg='black', font=('helvetica', 14, 'bold'))**  **canvas1.create\_window(1390, 400, window=button3)**  **button4 = tk.Button(text='Monthly pass', command=getSquareRoot3, bg='white', fg='black', font=('helvetica', 14, 'bold'))**  **canvas1.create\_window(1290, 450, window=button4)**  **button5 = tk.Button(text='local Ticket', command=getSquareRoot4, bg='white', fg='black', font=('helvetica', 14, 'bold'))**  **canvas1.create\_window(1120, 450, window=button5)**  **button6 = tk.Button(text='Help', command=getSquareRoot5, bg='white', fg='black', font=('helvetica', 14, 'bold'))**  **canvas1.create\_window(1200, 500, window=button6)**  **def level1():**  **import l2**  **btn = tk.Button(root, text = 'change language', bd = '5',fg='red', command = root.destroy, font=('helvetica', 14, 'bold'))**  **btn.pack(side=RIGHT)**  **root.mainloop()** |
| **B.2** | **Interfaces of ticket vending machine for metro train:** |
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| **B.3** | **HMI principles used to design interface.** |
|  | (Write down various HMI principles you have used in this interface designing)   1. Match the operator's mental model. 2. Fit design to the operators' physical environment. 3. Provide a sense of place. 4. Anticipate operators' needs. 5. Minimize cognitive load. 6. Be consistent and follow conventions. 7. Show status and provide feedback.   Coordinate the visual design with the information design. |
|  |  |
| **B.4** | **Target audience of this Interface?**  (Write down target audience of this interface) |
|  | Target audience for this interface will the people who travel through train on day-to-day basis. |
| **B.4** | **Conclusion:**  **(**Write appropriate conclusion based on GUI ,HMI Principles and interaction styles used)  Thus, we successfully designed an interface for automated ticket vending machine (ATVM) for train. |

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