Introduction to Vending Machines

Vending machines are self-service retail units that dispense a variety of products, from snacks and beverages to personal care items and electronics, upon the insertion of coins, bills, or electronic payment. These convenient and ubiquitous fixtures have become an integral part of modern life, providing quick and easy access to a range of goods across diverse settings.

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Components and Mechanics of Vending Machines

1 Coin Mechanism

Accepts and verifies coins or bills to initiate the vending process.

22 Product Dispensing System

Responsible for selecting and delivering the chosen product to the customer.

3 Inventory Management

Tracks product levels and triggers restocking notifications.

4 Electronic Control Systems

Coordinate the various components and enable advanced features, such as cashless payments.

Advantages and Disadvantages of Vending Machines

Advantages

Convenience, 24/7 availability, cost-effectiveness, and reduced labor costs for businesses.

Disadvantages

Limited product selection, potential for vandalism or theft, and maintenance requirements.

Vending Machine Trends and Innovations

Cashless Payments

Integrating mobile wallets, contactless cards, and other digital payment methods.

Healthier Options

Offering a wider selection of nutritious snacks and drinks to meet changing consumer preferences.

Smart Vending

Incorporating internet connectivity, data analytics, and remote management capabilities.

Sustainability

Implementing eco-friendly features, such as energy-efficient cooling systems and recycling programs.

Considerations for Vending Machine Placement and Maintenance

1

Location

Choosing high-traffic areas with a steady flow of potential customers.

2

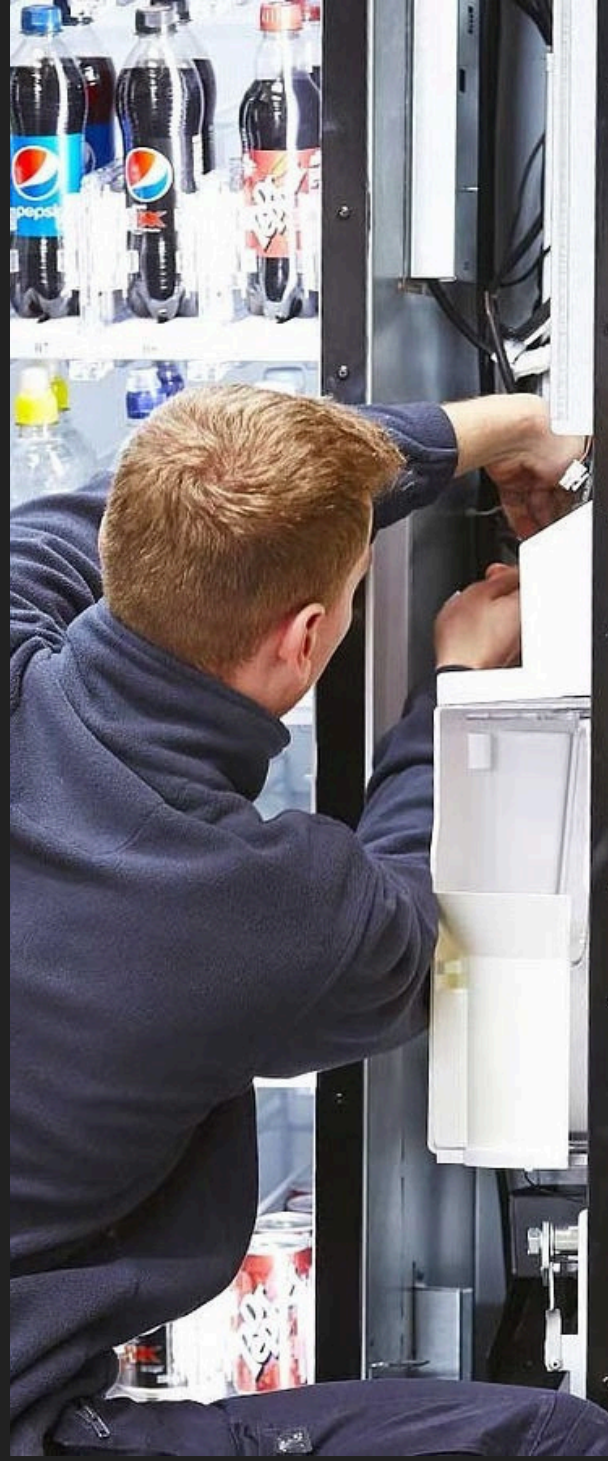
Accessibility

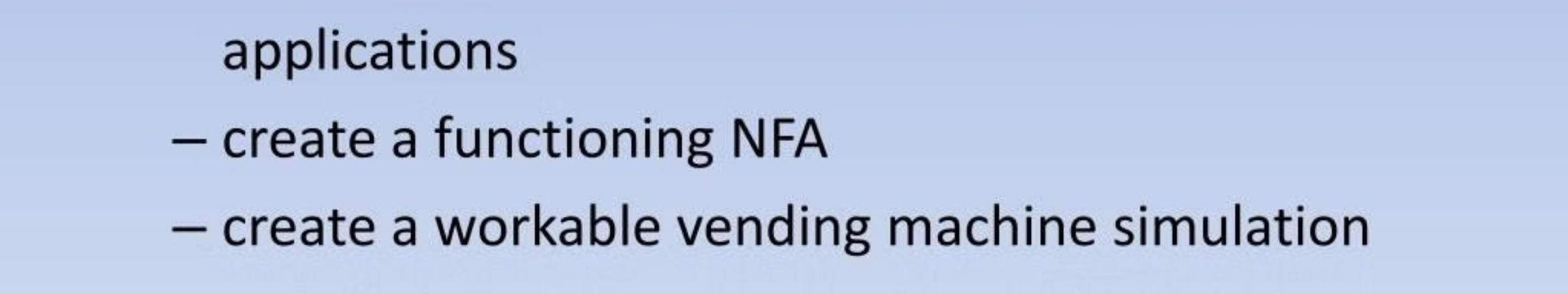
Ensuring the machine is easily visible and within reach for all users.

3

Maintenance

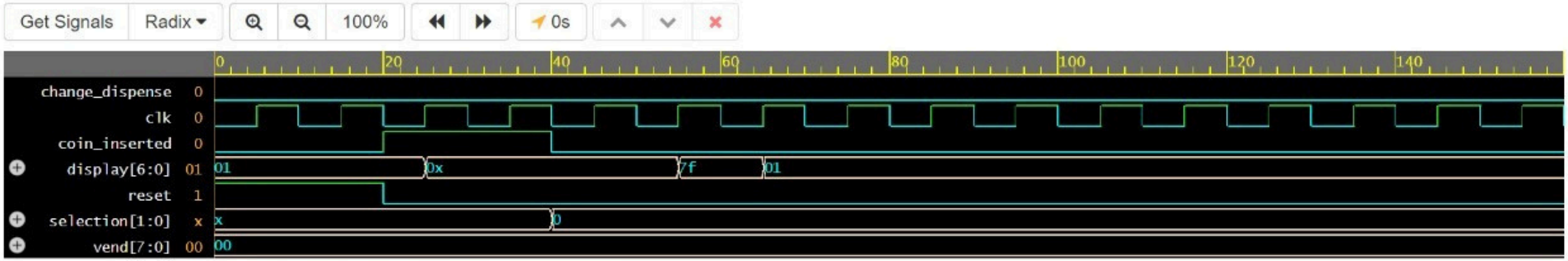
Regularly stocking, cleaning, and repairing the machine to ensure optimal per formance.





Conclusion and Slide for Adding Images

Vending machines have evolved from simple coin-operated devices to sophisticated, technologically-advanced systems that cater to the diverse needs of modern consumers. As the industry continues to innovate, these ubiquitous fixtures will likely play an even more integral role in our daily lives, providing convenient access to a wide range of products and services.



Note: To revert to EPWave opening in a new browser window, set that option on your user page.

GRAPH AND CODES

```
    input wire clk,
    input wire reset,
    input wire coin_inserted,
    input wire [1:0] selection,
    output reg [6:0] display,
    output reg [7:0] vend,
    output reg change_dispense
);

// Define parameters for item prices
parameter PRICE_A = 5; // Price of item A in cents
parameter PRICE_B = 10; // Price of item B in cents
parameter PRICE_C = 15; // Price of item C in cents

// Internal registers
reg [7:0] inventory; // Inventory register for items A, B, and C (initially 10 of each)
reg [7:0] balance; // Balance register for tracking the amount inserted by the user
```

```

// Parameters
parameter CLK_PERIOD = 10; // Clock period in ns

// Inputs
reg clk = 0;
reg reset = 0;
reg coin_inserted = 0;
reg [1:0] selection;
// Outputs
wire [6:0] display;
wire [7:0] vend;
wire change_dispense;

// Instantiate the vending machine module
VendingMachine dut (
    .clk(clk),
    .reset(reset),
    .coin_inserted(coin_inserted),
    .selection(selection),
```


THANK
YOU