

A decorative graphic on the left side of the image consisting of white and light blue lines that resemble a circuit board or a stylized tree. The lines are vertical and horizontal, with small circles at the ends, creating a complex, branching pattern.

PAYCHECK

GET WHAT YOU PAYED FOR.

BACKGROUND & PROBLEM

- It costs money to generate, transmit, and distribute electricity. It also costs to build and maintain existing infrastructure.



- These are the reasons why people should pay electricity, but are often neglected as households tend to bridge electricity and use it illegally (not pay for it).



PROPOSED SOLUTION

I introduce the PayCheck system, which keeps track of the electricity being used by households while considering the electricity units the household actually payed for.

Consists of the Following:

- + Households(nodes),Power Stations (nodes) and Power Supply/Electricity (edge).

 - *Households have (Household name & Actual payment for electricity)

 - *PowerStation have (Power station identifier e.g “PoleOne”)

 - *Power Supply has (The cost of electricity supplied to a household)

- + Makes use of the Breath First Traversal to visit and inspect existing households and power stations

The system makes sure that for each household to receive electricity supply it has to pay for it. If the house uses more electricity than what it has payed for ,it will result in the house losing allocation of the electricity. This then highlights that the relationship between households and the supply of electricity depends on the payment from the household.



THUS HELPING US TO AVOID RESOURCE OVERLOAD
WITHOUT FUNDING FOR MAINTENANCE

HOW PAYCHECK WORKS.

- Step 1: Retrieve current household and power supply data, including visuals

PayCheck

Get Current INFO

Response section

```
*****  
[House&Resource | Units Paid]:  
[Value=Jack weight=2000  
, Value=Ntuli weight=999  
, Value=Cindi weight=566  
, Value=Smith weight=1200  
, Value=Nkosi weight=806  
, Value=PoleOne weight=0  
, Value=PoleTwo weight=0  
, Value=PoleThree weight=0  
]  
*****
```

Response section

```
*****  
[Power Supply | Cost]  
[[ PoleThree(0) ] -> [ Jack(2000) ] = 455  
, [ PoleThree(0) ] -> [ Ntuli(999) ] = 1163  
, [ PoleTwo(0) ] -> [ Cindi(566) ] = 1918  
, [ PoleTwo(0) ] -> [ Smith(1200) ] = 1407  
, [ PoleOne(0) ] -> [ Nkosi(806) ] = 164  
, [ PoleOne(0) ] -> [ PoleTwo(0) ] = 1777  
, [ PoleTwo(0) ] -> [ PoleThree(0) ] = 987  
, [ PoleThree(0) ] -> [ PoleOne(0) ] = 356  
]  
*****
```

Response section

Visual representation

DRAW VISUAL

Manage

Exit

PayCheck

Get Current INFO

Response section

```
*****  
[House&Resource | Units Paid]:  
[Value=Jack weight=2000  
, Value=Ntuli weight=999  
, Value=Cindi weight=566  
, Value=Smith weight=1200  
, Value=Nkosi weight=806  
, Value=PoleOne weight=0  
, Value=PoleTwo weight=0  
, Value=PoleThree weight=0  
]  
*****
```

Response section

```
*****  
[Power Supply | Cost]  
[[ PoleThree(0) ] -> [ Jack(2000) ] = 1956  
, [ PoleThree(0) ] -> [ Ntuli(999) ] = 1986  
, [ PoleTwo(0) ] -> [ Cindi(566) ] = 414  
, [ PoleTwo(0) ] -> [ Smith(1200) ] = 717  
, [ PoleOne(0) ] -> [ Nkosi(806) ] = 982  
, [ PoleOne(0) ] -> [ PoleTwo(0) ] = 840  
, [ PoleTwo(0) ] -> [ PoleThree(0) ] = 760  
, [ PoleThree(0) ] -> [ PoleOne(0) ] = 1265  
]  
*****
```

Response section

```
*****  
Household electricity supply monitor is created  
*****
```

Visual representation

DRAW VISUAL

```
graph TD  
PoleThree --- Ntuli  
PoleThree --- PoleOne  
PoleOne --- PoleTwo  
PoleTwo --- Cindi  
PoleTwo --- Jack  
PoleOne --- Nkosi
```

Manage

Exit

- Step2: Once you've gathered the information you can choose to manage it ,by going to the next page.

The screenshot displays the 'PayCheck' application window, which is divided into three main vertical panels. The left panel is for household management, the middle panel shows current information and response sections, and the right panel is for visual representation.

Household Management Panel (Left):

- Household Name:** A text input field.
- Units Payed (in Rands):** A text input field.
- Buttons:** 'ADD HOUSEHOLD' and 'CHECK EACH HOUSEHOLD' (both in blue).
- Checked Households:** A dropdown menu.
- New Units Payed (in Rands):** A text input field.
- Buttons:** 'EDIT HOUSEHOLD' and 'REMOVE HOUSEHOLD' (both in blue).
- Cost:** A text input field.
- From Pole:** A dropdown menu.
- To Household:** A dropdown menu.
- Buttons:** 'ADD POWER SUPPLY', 'CUT POWER SUPPLY', and 'Quit' (all in blue).

Current info Panel (Middle):

- Current info:** A text area displaying a list of power supply connections and costs, including entries like '[PoleThree(0)] -> [Jack(2000)]' and '[PoleTwo(0)] -> [Cindi(566)]'.
- Response section:** Two empty text input fields.

Visual Representation Panel (Right):

- Visual Representation:** A large blue area with a 'DRAW VISUAL' button at the top.

- Step3: You can add new household information.

PayCheck

Household Name

Sakhile

Units Payed (in Rands)

1000

ADD HOUSEHOLD

CHECK EACH HOUSEHOLD

Checked Households

New Units Payed (in Rands)

EDIT HOUSEHOLD

REMOVE HOUSEHOLD

Cost

From Pole

To Household

ADD POWER SUPPLY

CUT POWER SUPPLY

Quit

Current info

[Power Supply | Cost]
[[PoleThree(0)] -> [Jack(2000)]
, [PoleThree(0)] -> [Ntuli(999)]
, [PoleTwo(0)] -> [Cindi(566)] =
, [PoleTwo(0)] -> [Smith(1200)]
, [PoleOne(0)] -> [Nkosi(806)] :
, [PoleOne(0)] -> [PoleTwo(0)]
, [PoleTwo(0)] -> [PoleThree(0)]
, [PoleThree(0)] -> [PoleOne(0)]

Response section

Visual Representation

DRAW VISUAL

PayCheck

Household Name

Units Payed (in Rands)

ADD HOUSEHOLD

CHECK EACH HOUSEHOLD

Checked Households

New Units Payed (in Rands)

EDIT HOUSEHOLD

REMOVE HOUSEHOLD

Cost

From Pole

To Household

ADD POWER SUPPLY

CUT POWER SUPPLY

Quit

Current info

[Power Supply | Cost]
[[PoleThree(0)] -> [Jack(2000)]
, [PoleThree(0)] -> [Ntuli(999)]
, [PoleTwo(0)] -> [Cindi(566)] =
, [PoleTwo(0)] -> [Smith(1200)]
, [PoleOne(0)] -> [Nkosi(806)] :
, [PoleOne(0)] -> [PoleTwo(0)]
, [PoleTwo(0)] -> [PoleThree(0)]
, [PoleThree(0)] -> [PoleOne(0)]

Response section

Added Household: Sakhile

Updated Households

Value=Jack weight=2000
Value=Ntuli weight=999
Value=Cindi weight=566
Value=Smith weight=1200
Value=Nkosi weight=806
Value=PoleOne weight=0

Visual Representation

DRAW VISUAL


- Step 4: Check every household information (BFT Travesal), once the system completes the check, it will list the resulting households in a drop-box, which you will use to choose the household you wish to edit (only allows payment edit).

PayCheck


Household Name

Units Paid (in Rands)

ADD HOUSEHOLD

 CHECK EACH HOUSEHOLD

Checked Households



Ntuli

Cindi

Smith

Nkosi

PoleOne

PoleTwo

PoleThree

Sakhile

Jack

To Household

ADD POWER SUPPLY

CUT POWER SUPPLY

Quit

Current info

[Power Supply | Cost]

[[PoleThree(0)] -> [Jack(2000)]

, [PoleThree(0)] -> [Ntuli(999)]

, [PoleTwo(0)] -> [Cindi(566)] =

, [PoleTwo(0)] -> [Smith(1200)]

, [PoleOne(0)] -> [Nkosi(806)] :

, [PoleOne(0)] -> [PoleTwo(0)]

, [PoleTwo(0)] -> [PoleThree(0)]

, [PoleThree(0)] -> [PoleOne(0)]

Response section

Added Household: Sakhile

Updated Households

Value=Jack weight=2000

Value=Ntuli weight=999

Value=Cindi weight=566

Value=Smith weight=1200

Value=Nkosi weight=806

Value=PoleOne weight=0

Visual Representation

DRAW VISUAL

PayCheck

Household Name

Units Paid (in Rands)

ADD HOUSEHOLD

CHECK EACH HOUSEHOLD

Checked Households

Cindi

New Units Paid (in Rands)

1000

EDIT HOUSEHOLD

REMOVE HOUSEHOLD

Cost

From Pole

To Household

ADD POWER SUPPLY

CUT POWER SUPPLY

Quit

Current info

[Power Supply | Cost]

[[PoleThree(0)] -> [Jack(2000)]

, [PoleThree(0)] -> [Ntuli(999)]

, [PoleTwo(0)] -> [Cindi(566)] =

, [PoleTwo(0)] -> [Smith(1200)]

, [PoleOne(0)] -> [Nkosi(806)] :

, [PoleOne(0)] -> [PoleTwo(0)]

, [PoleTwo(0)] -> [PoleThree(0)]

, [PoleThree(0)] -> [PoleOne(0)]

Response section

Household: Cindi | new payment

Updated households

Value=Ntuli weight=999

Value=Cindi weight=1000

Value=Smith weight=1200

Value=Nkosi weight=806

Value=PoleOne weight=0

Value=PoleTwo weight=0

Visual Representation

DRAW VISUAL

- The traversal will help with correctly removing a household who has met the conditions to lose electricity supply. The edge carries the household electricity cost and the node carries the actual amount the household paid for. After traversing the system will be able to compare the households updated payment and its cost of power supplied.

The screenshot displays the 'PayCheck' application window, which is divided into three main sections: a left sidebar for household management, a central panel for current information and responses, and a right panel for visual representation.

Left Sidebar (Household Management):

- Household Name:** A text input field.
- Units Payed (in Rands):** A text input field.
- Buttons:** 'ADD HOUSEHOLD', 'CHECK EACH HOUSEHOLD', 'EDIT HOUSEHOLD', and 'REMOVE HOUSEHOLD' (marked with a red X).
- Checked Households:** A dropdown menu showing 'Cindi'.
- New Units Payed (in Rands):** A text input field.
- Cost:** A text input field.
- From Pole:** A dropdown menu.
- To Household:** A dropdown menu.
- Buttons:** 'ADD POWER SUPPLY', 'CUT POWER SUPPLY', and 'Quit'.

Central Panel (Current info and Response section):

- Current info:** A text area displaying a list of households and their weights:
[Power Supply | Cost]
[[PoleThree(0)] -> [Jack(2000)]
[PoleThree(0)] -> [Ntuli(999)]
[PoleTwo(0)] -> [Cindi(566)]
[PoleTwo(0)] -> [Smith(1200)]
[PoleOne(0)] -> [Nkosi(806)]
[PoleOne(0)] -> [PoleTwo(0)]
[PoleTwo(0)] -> [PoleThree(0)]
[PoleThree(0)] -> [PoleOne(0)]
- Response section:** A text area displaying the results of a removal operation:
Removed Household: Cindi
Updated Households
Value=Jack weight=2000
Value=Ntuli weight=999
Value=Smith weight=1200
Value=Nkosi weight=806
Value=PoleOne weight=0
Value=PoleTwo weight=0

Right Panel (Visual Representation):

- DRAW VISUAL:** A button to generate a visual representation of the system.

- Step 4: You can add power supply to new households, existing households and even previously removed households if they were added again and qualify for electricity supply.

PayCheck

Household Name

Units Paid (in Rands)

ADD HOUSEHOLD

CHECK EACH HOUSEHOLD

Checked Households

Cindi

New Units Paid (in Rands)

EDIT HOUSEHOLD

REMOVE HOUSEHOLD

Cost

1000

From Pole

PoleOne

To Household

Sakhile

ADD POWER SUPPLY

CUT POWER SUPPLY

Quit

Current info

[Power Supply | Cost]

[[PoleThree(0)] -> [Jack(2000)]

, [PoleThree(0)] -> [Ntuli(999)]

, [PoleTwo(0)] -> [Cindi(566)] =

, [PoleTwo(0)] -> [Smith(1200)]

, [PoleOne(0)] -> [Nkosi(806)] :

, [PoleOne(0)] -> [PoleTwo(0)]

, [PoleTwo(0)] -> [PoleThree(0)]

, [PoleThree(0)] -> [PoleOne(0)]

1

Response section

Removed Household: Cindi

Updated Households

Value=Jack weight=2000

Value=Ntuli weight=999

Value=Smith weight=1200

Value=Nkosi weight=806

Value=PoleOne weight=0

Value=PoleTwo weight=0

Value=PoleThree weight=0

Response section

[Power supply added | Cost]

[[PoleThree(0)] -> [Jack(2000)]

, [PoleThree(0)] -> [Ntuli(999)]

, [PoleTwo(0)] -> [Cindi(566)] =

, [PoleTwo(0)] -> [Smith(1200)]

, [PoleOne(0)] -> [Nkosi(806)] :

, [PoleOne(0)] -> [PoleTwo(0)]

, [PoleTwo(0)] -> [PoleThree(0)]

, [PoleThree(0)] -> [PoleOne(0)]

, [Jack(2000)] -> [PoleThree(0)]

Visual Representation

DRAW VISUAL

- Step 5: You may also just cut the power supply, instead of removing the penalised household from the data.
- System also provides space for updated visualisation of the information.

PayCheck

Household Name

Units Paid (in Rands)

ADD HOUSEHOLD

CHECK EACH HOUSEHOLD

Checked Households

Cindi

New Units Paid (in Rands)

EDIT HOUSEHOLD

REMOVE HOUSEHOLD

Cost

From Pole

PoleOne

To Household

Sakhile

ADD POWER SUPPLY

CUT POWER SUPPLY

Quit

Current info

[Power Supply | Cost]
[[PoleThree(0)] -> [Jack(2000)]
, [PoleThree(0)] -> [Ntuli(999)]
, [PoleTwo(0)] -> [Cindi(566)]
, [PoleTwo(0)] -> [Smith(1200)]
, [PoleOne(0)] -> [Nkosi(806)]
, [PoleOne(0)] -> [PoleTwo(0)]
, [PoleTwo(0)] -> [PoleThree(0)]
, [PoleThree(0)] -> [PoleOne(0)]

Response section

Removed Household: Cindi

Updated Households

Value=Jack weight=2000
Value=Ntuli weight=999
Value=Smith weight=1200
Value=Nkosi weight=806
Value=PoleOne weight=0
Value=PoleTwo weight=0

Response section

Cut power for: Sakhile

Updated power supply

[[PoleThree(0)] -> [Jack(2000)]
, [PoleThree(0)] -> [Ntuli(999)]
, [PoleTwo(0)] -> [Cindi(566)]
, [PoleTwo(0)] -> [Smith(1200)]
, [PoleOne(0)] -> [Nkosi(806)]
, [PoleOne(0)] -> [PoleTwo(0)]

Visual Representation

DRAW VISUAL

The image features a blue gradient background with white circuit-like lines in the corners. These lines consist of straight segments and small circles, resembling a stylized electronic circuit or data flow diagram. They are positioned in the top-left, top-right, bottom-left, and bottom-right corners, framing the central text.

END OF PAYCHECK