

# AI PROJECT - STOCK ANALYSIS

## **GROUP - 3**

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# Project Objective

## Stock Analysis

- The expert system utilizes current stock market data to give market advice.
- The advice rendered by the expert system is limited to stock actions, i.e., whether to sell, buy or hold the stock of a particular company.

# Methodology

## Domain Expert

- Inputs from multiple sources have been used to simulate a domain expert in the field of stock analysis.
- Educational articles about the stock markets, investment strategies followed by successful investors have been used to create the rules.
- Research papers in the field have also been used for inputs.

# Continued...

## Data Base

- The database to predict action consists of the performance indices of a stock over a period of two months.
- Around 100 companies have been added to the database.
- Data about the opening and closing price of the stock, its trading volume, inflations rate has been collected.
- Data has been collected only for the BSE stocks companies to ensure uniformity in data.

# Continued...

## Knowledge Base

- Action is predicted using a rule-based approach.
- Rules are used to predict the momentum, overvaluation, overall economic trends and investor sentiment.
- The expert system uses a prioritized list of rules to recommend action.
- There are cases of conflicting recommendations which cannot be solved by priority assignment, in which case the system expresses its inability to make a prediction.

# Implementation

Template of the Facts ::

```
; *****  
; FACT TEMPLATES  
; *****  
  
(deftemplate stock-info-previous-month  
  (slot company-name)  
  (slot opening-price)  
  (slot closing-price)  
  (slot low-price)  
  (slot high-price)  
  (slot volume)  
  (slot inflation-rate))  
  
(deftemplate stock-info-current-month  
  (slot company-name)  
  (slot opening-price)  
  (slot closing-price)  
  (slot low-price)  
  (slot high-price)  
  (slot volume)  
  (slot inflation-rate))
```

# Examples of the Facts ::

```
(def facts take-stock-info-previous-month
  (stock-info-previous-month (company-name BIL) (opening-price 287.00) (closing-price 302.65) (low-price 274.00) (high-price 422.90) (volume 1528) (inflation-rate 3.69))

  (stock-info-previous-month (company-name BATA_INDIA_LTD) (opening-price 1084.00) (closing-price 971.95) (low-price 933.35) (high-price 1097.45) (volume 39852) (inflation-rate 3.69))

  (stock-info-previous-month (company-name BIRLACORPN) (opening-price 763.85) (closing-price 638.85) (low-price 628.80) (high-price 783.95) (volume 4991) (inflation-rate 3.69))

  (stock-info-previous-month (company-name BLUEDART) (opening-price 3449.00) (closing-price 2965.10) (low-price 2908.85) (high-price 3474.00) (volume 1194) (inflation-rate 3.69)))
```

```
(def facts take-stock-info-current-month
  (stock-info-current-month (company-name BIL) (opening-price 290.00) (closing-price 258.15) (low-price 238.00) (high-price 299.90) (volume 1603) (inflation-rate 3.77))

  (stock-info-current-month (company-name BATA_INDIA_LTD) (opening-price 971.95) (closing-price 921.95) (low-price 844.60) (high-price 989.90) (volume 26321) (inflation-rate 3.77))

  (stock-info-current-month (company-name BIRLACORPN) (opening-price 631.00) (closing-price 563.30) (low-price 521.00) (high-price 668.00) (volume 3339) (inflation-rate 3.77))

  (stock-info-current-month (company-name BLUEDART) (opening-price 2900.05) (closing-price 2798.45) (low-price 2620.00) (high-price 3027.00) (volume 835) (inflation-rate 3.77)))
```

# Rules used ::

```
; RULE rule-1 *****
; IF
;   open price of share rises from the previous month
; THEN
;   invest money for particular month

; RULE rule-2 *****
; IF
;   open price of share falls from previous month
; THEN
;   do not invest money for particular month.

; RULE rule-3 *****
; IF
;   open price and low price rise and at the same time high price of share also rising
; THEN
;   invest money for particular share.
```



# Rules Continued ::

```
; RULE rule-4 *****  
; IF  
;   open price and low price rise and at the same time close price also rising  
; THEN  
;   investing money for particular month may be harmful.
```

```
; RULE rule-5 *****  
; IF  
;   volume and open price of share increase  
; THEN  
;   share prices also increase i.e. sell share and earn profit.
```

```
; RULE rule-6 *****  
; IF  
;   open price and close price rising and at the same time low price also rising  
; THEN  
;   buy company's share at low price.
```

# Rules Continued

```
; RULE rule-7 *****
; IF
;   volume and close price falls down
; THEN
;   do not invest money.

; RULE rule-8 *****
; IF
;   inflation rate increases
; THEN
;   economical growth of the country also increases i.e. share market performs outstanding

; RULE rule-9 *****
; IF
;   inflation rate decreases
; THEN
;   share price also decreases that shows the recession period of country.
```

# Rules Continued ::

```
; RULE rule-10 *****
; IF
;   close price of share is rising and check also open price and high price also rising
; THEN
;   sell share and earn money.

;RULE rule-11 *****
;IF
;   closing price is greater than opening price for both the months volume increases
;THEN
;   Hold your stocks

;RULE rule-12 *****
;IF
;   closing price is lesser than opening price for both the months volume increases
;THEN
;   Sell the stocks
```

# Working Example

Input from the user ::

```
Jess> (batch "examples/jess/stock.clp")  
HI USER! What do you wish to do? (Buy: b Hold: h Sell: s)? b  
Please enter the Company Name !! --> BATA_INDIA_LTD█
```

# Working Examples Continued::

Example of user selecting “Buy” as an option

```
HI USER! What do you wish to do? (Buy: b Hold: h Sell: s)? b
Please enter the Company Name !! --> BATA_INDIA_LTD
IT'S RISKY TO INVEST MONEY IN : BATA_INDIA_LTD IN THIS MONTH DON'T BUY !!
Ask again? (y/n) n
SEE YOU AGAIN !!
```

```
HI USER! What do you wish to do? (Buy: b Hold: h Sell: s)? b
Please enter the Company Name !! --> HAVELLS
SHARE MARKET PERFORMS OUTSTANDING !! YOU SHOULD BUY THE STOCKS OF : HAVELLS
Ask again? (y/n) █
```

# Working Examples Continued::

Example of user selecting “Hold” as an option

```
HI USER! What do you wish to do? (Buy: b Hold: h Sell: s)? h
Please enter the Company Name !! --> BIL
YOU SHOULD HOLD THE STOCKS , WAIT FOR FUTURE!!
Ask again? (y/n) █
```

```
HI USER! What do you wish to do? (Buy: b Hold: h Sell: s)? h
Please enter the Company Name !! --> TATACHEMICALSLTD
HOLD THE STOCKS!!
Ask again? (y/n) y
```



# Working Examples Continued::

Example of user selecting “Sell” as an option

```
HI USER! What do you wish to do? (Buy: b Hold: h Sell: s)? s
Please enter the Company Name !! --> HCLTECH
YOU SHOULD SELL THE STOCKS OF : HCLTECH AND EARN PROFIT !!
Ask again? (y/n) █
```

```
HI USER! What do you wish to do? (Buy: b Hold: h Sell: s)? s
Please enter the Company Name !! --> BATA_INDIA_LTD
YOU SHOULD NOT SELL THE STOCKS !!
Ask again? (y/n) █
```

# Working Examples Continued::

## Invalid Input

```
HI USER! What do you wish to do? (Buy: b Hold: h Sell: s)? q
Please enter the Company Name !! --> LIC
PLEASE ENTER VALID CHOICE (b or h or s) !!
```

```
HI USER! What do you wish to do? (Buy: b Hold: h Sell: s)? s
Please enter the Company Name !! --> PARLE-G
COMPANY NOT FOUND IN DATABASE :(
```





THANK YOU !!