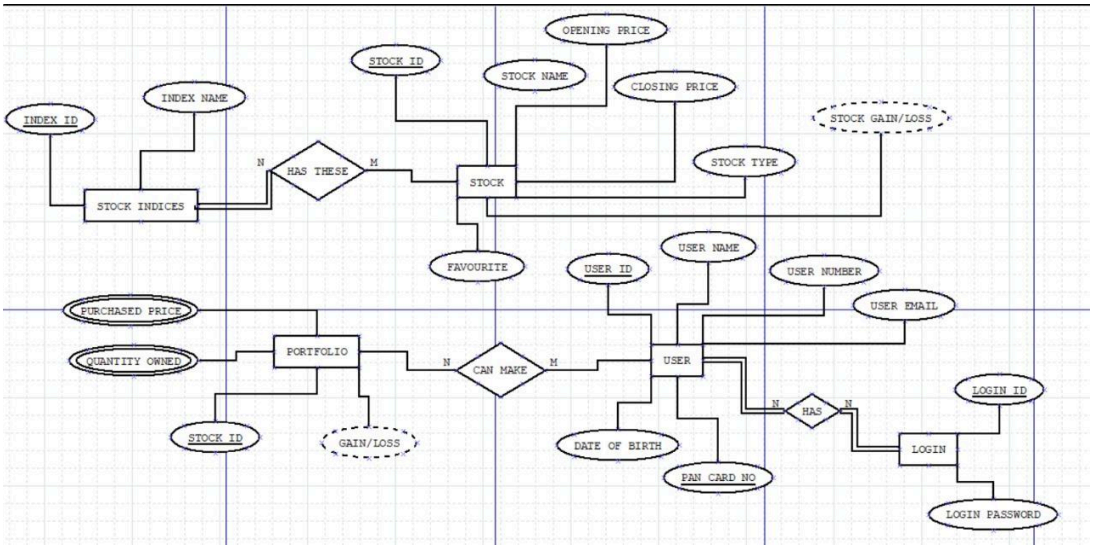
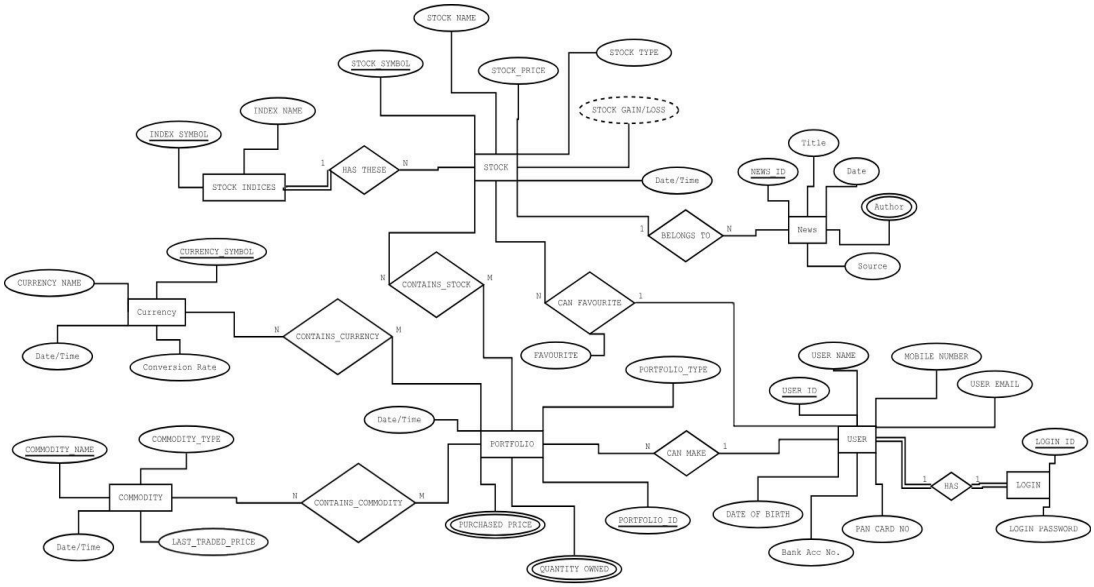
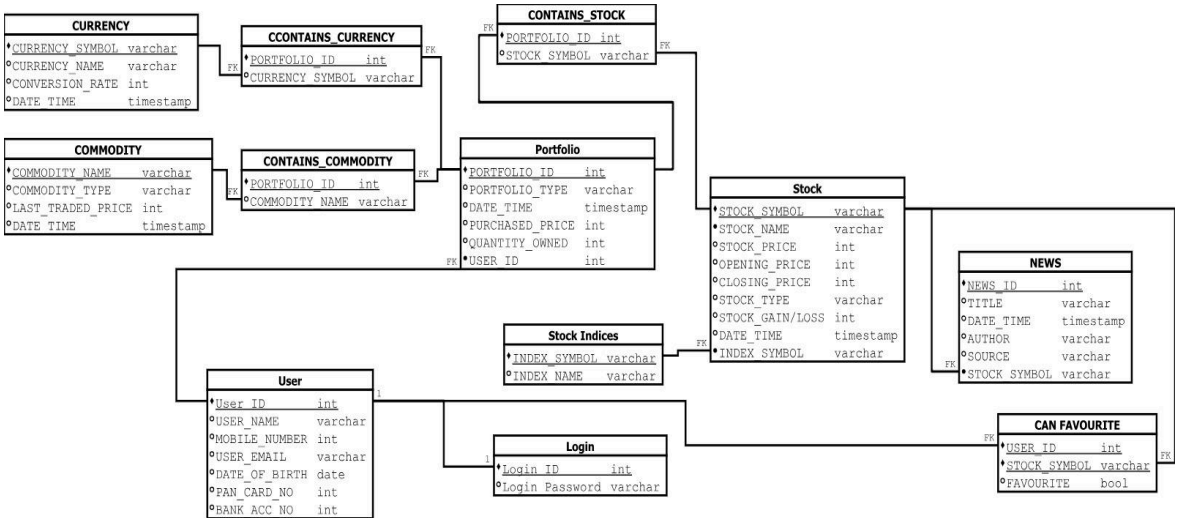
INITIAL ERD


OPENING PRICE
STOCK ID
STOCK NAME
CLOSING PRICE
INDEX NAME
INDEX ID
STOCK GAIN/LOSS
N
HAS THESE
M
STOCK TYPE
STOCK
STOCK INDICES
FAVOURITE
USER NAME
USER ID
USER NUMBER
USER EMAIL
PURCHASED PRICE
QUANTITY OWNED
PORTFOLIO
N
CAN MAKE
M
USER
LOGIN ID
N
HAS
N
STOCK ID
GAIN/LOSS
DATE OF BIRTH
LOGIN
PAN CARD NO
LOGIN PASSWORD

FINAL ERD


STOCK NAME
STOCK SYMBOL
STOCK PRICE
STOCK TYPE
STOCK GAIN/LOSS
INDEX NAME
INDEX SYMBOL
HAS THESE
STOCK
STOCK INDICES
Date/Time
NEWS_ID
Title
Date
Author
BELONGS TO
News
Source
CURRENCY_SYMBOL
CURRENCY NAME
CONTAINS_STOCK
CAN FAVOURITE
Currency
CONTAINS_CURRENCY
Date/Time
Conversion Rate
FAVOURITE
PORTFOLIO_TYPE
USER NAME
MOBILE NUMBER
USER_ID
USER EMAIL
Date/Time
PORTFOLIO
CAN MAKE
USER
LOGIN_ID
COMMODITY_NAME
COMMODITY_TYPE
COMMODITY
CONTAINS_COMMODITY
HAS
LOGIN
PURCHASED PRICE
PORTFOLIO_ID
DATE OF BIRTH
PAN CARD NO
LOGIN PASSWORD
Date/Time
LAST_TRADED_PRICE
QUANTITY OWNED
Bank Acc No.

RELATIONAL SCHEMA TABLE



FUNCTIONAL DEPENDENCIES & NORMALISATION PROOF

STOCK

STOCK_SYMBOL → STOCK_NAME
STOCK_SYMBOL → STOCK_TYPE
{STOCK_SYMBOL, DATE_TIME} → {STOCK_PRICE, OPENING_PRICE, CLOSING_PRICE, STOCK_GAIN_LOSS}
STOCK_NAME → STOCK_TYPE
KEY: {STOCK_NAME,DATE_TIME}
BCNF PROOF: For BCNF, each FD should be Candidate Key or Super Key, and all the FDs follow the rule and hence the relation is in BCNF.

STOCK INDICES

INDEX_SYMBOL → INDEX_NAME
KEY: INDEX_SYMBOL
BCNF PROOF: For BCNF, each FD should be Candidate Key or Super Key, and all the FDs follow the rule and hence the relation is in BCNF.

PORTFOLIO

PORTFOLIO_ID → PORTFOLIO_TYPE
{PORTFOLIO_ID,DATE_TIME} → PURCHASED_PRICE
{PORTFOLIO_ID,DATE_TIME} → QUANTITY_OWNED
KEY: {PORTFOLIO_ID,DATE_TIME}
BCNF PROOF: For BCNF, each FD should be Candidate Key or Super Key, and all the FDs follow the rule and hence the relation is in BCNF.

LOGIN

LOGIN_ID → LOGIN_PASSWORD
KEY: LOGIN_ID
BCNF PROOF: For BCNF, each FD should be Candidate Key or Super Key, and all the FDs follow the rule and hence the relation is in BCNF.

CURRENCY

CURRENCY_SYMBOL → CURRENCY_NAME
{CURRENCY_SYMBOL, DATE_TIME} → CONVERSION_RATE
KEY: {CURRENCY_SYMBOL, DATE_TIME}
BCNF PROOF: For BCNF, each FD should be Candidate Key or Super Key, and all the FDs follow the rule and hence the relation is in BCNF.

COMMODITY

COMMODITY_NAME → COMMODITY_TYPE
{COMMODITY_NAME, DATE_TIME} → LAST_TRADED_PRICE
KEY: {COMMODITY_NAME, DATE_TIME}
BCNF PROOF: For BCNF, each FD should be Candidate Key or Super Key, and all the FDs follow the rule and hence the relation is in BCNF.

CONTAINS_STOCK

PORTFOLIO_ID → STOCK_SYMBOL
KEY: PORTFOLIO_ID
BCNF PROOF: For BCNF, each FD should be Candidate Key or Super Key, and all the FDs follow the rule and hence the relation is in BCNF.

CONTAINS_CURRENCY

PORTFOLIO_ID → CURRENCY_SYMBOL
KEY: PORTFOLIO_ID
BCNF PROOF: For BCNF, each FD should be Candidate Key or Super Key, and all the FDs follow the rule and hence the relation is in BCNF.

CONTAINS_COMMODITY

PORTFOLIO_ID → COMMODITY_NAME
KEY: PORTFOLIO_ID
BCNF PROOF: For BCNF, each FD should be Candidate Key or Super Key, and all the FDs follow the rule and hence the relation is in BCNF.

USER

USER_ID → USER_NAME
USER_ID → MOBILE_NUMBER
USER_ID → USER_EMAIL
USER_ID → DATE_OF_BIRTH
USER_ID → PAN_CARD_NO

USER_ID → BANK_ACC_NO
KEY: USER_ID
BCNF PROOF: For BCNF, each FD should be Candidate Key or Super Key, and all the FDs follow the rule and hence the relation is in BCNF

NEWS

NEWS_ID → TITLE
NEWS_ID → AUTHOR
NEWS_ID → DATE_TIME
NEWS_ID → SOURCE
KEY: NEWS_ID
BCNF PROOF: For BCNF, each FD should be Candidate Key or Super Key, and all the FDs follow the rule and hence the relation is in BCNF.