equity.R

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```
library(Rblpapi)

blpConnect()

clean_df <- function(df) {
  if (is.null(df)) return(NULL)
  df <- as.data.frame(df)
  df <- df[!duplicated(df), , drop = FALSE]
  names(df) <- make.names(names(df))
  df
}

third_friday <- function(year, month) {
  d1 <- as.Date(sprintf("%04d-%02d-01", year, month))
  w  <- as.POSIXlt(d1)$wday
  first_fri <- d1 + ((5 - w + 7) %% 7)
  first_fri + 14
}

next_n_third_fridays <- function(asof, n = 3) {
  asof <- as.Date(asof)
  y <- as.integer(format(asof, "%Y"))
  m <- as.integer(format(asof, "%m"))
  out <- c()

  for (k in 0:24) {
    yy <- y + ((m - 1 + k) %/% 12)
    mm <- ((m - 1 + k) %% 12) + 1
    tf <- third_friday(yy, mm)
    if (tf >= asof) out <- c(out, tf)
    if (length(out) >= n) break
  }
  as.Date(out[1:n])
}

find_chain_field <- function(tick) {
  candidates <- c("OPT_CHAIN", "OPTION_CHAIN", "OPT_CHAIN_FULL", "CHAIN_FULL")
  for (f in candidates) {
    x <- tryCatch(bds(tick, f), error = function(e) NULL)
    if (!is.null(x)) {
      x <- as.data.frame(x)
      if (nrow(x) > 0) return(f)
    }
  }
  stop(paste0("No option chain field worked for ", tick))
}

get_data_one_day <- function(label,asof_date,out_dir = ".",tickers_equity = c("TSLA US
Equity", "SPY US Equity"),ticker_vix = "VIX Index",rate_ticker = NULL) {

  asof_date <- as.Date(asof_date)
  run_time_local <- format(Sys.time(), "%Y-%m-%d %H:%M:%S %Z")
  expiries <- next_n_third_fridays(asof_date, n = 3)

  dir.create(file.path(out_dir, label), showWarnings = FALSE, recursive = TRUE)

  snap_fields <- c("PX_LAST", "BID", "ASK", "VOLUME", "CRNCY", "EXCH_CODE")
  snap_equity <- clean_df(tryCatch(bdp(tickers_equity, snap_fields), error = function(e)
NULL))
  snap_vix    <- clean_df(tryCatch(bdp(ticker_vix, snap_fields), error = function(e) NULL))
```

equity.R (continued)

Generated 2026-02-15 08:56:57

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  rate_val <- NA
  if (!is.null(rate_ticker)) {
    rate_tmp <- tryCatch(bdp(rate_ticker, c("PX_LAST")), error = function(e) NULL)
    if (!is.null(rate_tmp) && nrow(rate_tmp) > 0) rate_val <- as.numeric(rate_tmp[1, 1])
  }

  meta <- data.frame(
    label = label,
    run_time_local = run_time_local,
    asof_date = as.character(asof_date),
    expiry_1 = as.character(expiries[1]),
    expiry_2 = as.character(expiries[2]),
    expiry_3 = as.character(expiries[3]),
    rate_ticker = ifelse(is.null(rate_ticker), "", rate_ticker),
    rate_px_last = rate_val,
    stringsAsFactors = FALSE
  )

  write.csv(meta,        file.path(out_dir, label, "META.csv"),         row.names = FALSE)
  write.csv(snap_equity, file.path(out_dir, label, "SNAP_TSLA_SPY.csv"), row.names = FALSE)
  write.csv(snap_vix,    file.path(out_dir, label, "SNAP_VIX.csv"),      row.names = FALSE)

  eq_hist_fields <- c("PX_OPEN","PX_HIGH","PX_LOW","PX_LAST","VOLUME")
  end_date <- asof_date
  start_date <- end_date - 365 * 5
  eq_hist <- clean_df(tryCatch(
    bdh(tickers_equity, eq_hist_fields, start.date = start_date, end.date = end_date),
    error = function(e) NULL
  ))
  write.csv(eq_hist, file.path(out_dir, label, "EQUITY_HISTORY_5Y.csv"), row.names = FALSE)

  opt_fields <- c("PX_LAST","BID","ASK","VOLUME","OPEN_INT","IVOL_MID","DELTA","GAMMA","THETA
","VEGA","OPT_STRIKE_PX","OPT_PUT_CALL","MATURITY")

  for (under in tickers_equity) {
    chain_field <- find_chain_field(under)
    chain <- clean_df(tryCatch(bds(under, chain_field), error = function(e) NULL))
    if (is.null(chain) || nrow(chain) == 0) next

    opt_ticker_col <- names(chain)[1]
    opt_tickers <- unique(chain[[opt_ticker_col]])
    opt_tickers <- opt_tickers[!is.na(opt_tickers) & opt_tickers != ""]

    opts <- clean_df(tryCatch(bdp(opt_tickers, opt_fields), error = function(e) NULL))
    if (is.null(opts) || nrow(opts) == 0) next

    if ("MATURITY" %in% names(opts)) {
      mat <- suppressWarnings(as.Date(opts$MATURITY))
      keep <- !is.na(mat) & mat %in% expiries
      opts_3m <- opts[keep, , drop = FALSE]
    } else {
      opts_3m <- opts
    }

    under_tag <- gsub("[^A-Za-z0-9]+", "_", under)
    write.csv(chain,   file.path(out_dir, label, paste0(under_tag, "_OPTION_CHAIN_RAW.csv")),
row.names = FALSE)
    write.csv(opts_3m, file.path(out_dir, label, paste0(under_tag,
"_OPTIONS_NEXT3MONTHS_3RDFRI.csv")), row.names = FALSE)
```

equity.R (continued)

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  }

  invisible(TRUE)
}
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