

# Extra Credit Seung Min Song

2022-09-13

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Team member: Ted Kim

GitHub: <https://github.com/seung-m1nsong/607>

```
## Loading required package: DBI
```

```
##
```

```
## Attaching package: 'dplyr'
```

```
## The following objects are masked from 'package:stats':
```

```
##
```

```
## filter, lag
```

```
## The following objects are masked from 'package:base':
```

```
##
```

```
## intersect, setdiff, setequal, union
```

```
## -- Attaching packages ----- tidyverse 1.3.2 --
```

```
## v ggplot2 3.3.6      v purrr  0.3.4
```

```
## v tibble  3.1.8      v stringr 1.4.1
```

```
## v tidyr   1.2.0      v forcats 0.5.2
```

```
## v readr   2.1.2
```

```
## -- Conflicts ----- tidyverse_conflicts() --
```

```
## x dplyr::filter() masks stats::filter()
```

```
## x dplyr::lag()    masks stats::lag()
```

Create a connection object to MySQL database.

```
con <- DBI::dbConnect(  
  RMySQL::MySQL(),  
  user="root",  
  password="",  
  host="localhost",  
  dbname="stock"  
)
```

Create database *stock* if not exists, and use database *stock*

```
res <- dbSendQuery(con, 'create database if not exists stock;')
res <- dbSendQuery(con, 'use stock;')
```

Insert data to sp table

```
dfsp <- read.csv('https://raw.githubusercontent.com/seung-minsong/607/main/Extracredit/stockprice.csv')
dbWriteTable(con, 'sp', dfsp, row.names=FALSE, overwrite=TRUE)
```

```
[1] TRUE
```

Change data type using R

```
dbWriteTable(con, 'sp', dfsp, field.types=c(tradingdate='date', closeprice='double(8,2)', volume='bigint(16)'))
```

```
## [1] TRUE
```

## Year to date Average

sql

```
dfyeartodateavg <- DBI::dbGetQuery(con,
"select
  symbol, tradingdate,
  closeprice, avg(closeprice) over (partition by symbol order by tradingdate asc) as avg_closeprice,
  volume, avg(volume) over (partition by symbol order by tradingdate asc) as avg_volume,
  high, avg(high) over (partition by symbol order by tradingdate asc) as avg_high,
  low, avg(low) over (partition by symbol order by tradingdate asc) as avg_low
from
  sp
where
  symbol = 'amd';")
```

```
## Warning in .local(conn, statement, ...): Decimal MySQL column 5 imported as
## numeric
```

```
dfyeartodateavg
```

##	symbol	tradingdate	closeprice	avg_closeprice	volume	avg_volume	high
## 1	amd	2022-01-03	150.24	150.2400	59477670	59477670	151.65
## 2	amd	2022-01-04	144.42	147.3300	80200460	69839065	152.42
## 3	amd	2022-01-05	136.15	143.6033	65403170	68360433	143.76
## 4	amd	2022-01-06	136.23	141.7600	64802940	67471060	138.00
## 5	amd	2022-01-07	132.00	139.8080	58441100	65665068	137.44
## 6	amd	2022-01-10	132.00	138.5067	84671340	68832780	132.42
## 7	amd	2022-01-11	137.31	138.3357	77153910	70021513	138.99
## 8	amd	2022-01-12	137.47	138.2275	69669600	69977524	140.57
## 9	amd	2022-01-13	132.74	137.6178	76618060	70715361	141.25
## 10	amd	2022-01-14	136.88	137.5440	71078440	70751669	137.00
## 11	amd	2022-01-18	131.93	137.0336	56589460	69464195	136.39
## 12	amd	2022-01-19	128.27	136.3033	69831850	69494833	134.57

## 13	amd	2022-01-20	121.89	135.1946	91157290	71161176	128.51
## 14	amd	2022-01-21	118.81	134.0243	95685270	72912897	125.02
## 15	amd	2022-01-24	116.53	132.8580	116301800	75805491	116.77
## 16	amd	2022-01-25	111.13	131.5000	85102910	76386579	114.82
## 17	amd	2022-01-26	110.71	130.2771	94752610	77466934	117.16
## 18	amd	2022-01-27	102.60	128.7394	125954100	80160666	112.75
## 19	amd	2022-01-28	105.24	127.5026	98749520	81139026	105.40
## 20	amd	2022-01-31	114.25	126.8400	97205990	81942375	114.31
## 21	amd	2022-02-01	116.78	126.3610	122467900	83872161	117.26
## 22	amd	2022-02-02	122.76	126.1973	180065000	88244563	130.06
## 23	amd	2022-02-03	120.08	125.9313	103599500	88912169	125.37
## 24	amd	2022-02-04	123.60	125.8342	86212010	88799663	124.96
## 25	amd	2022-02-07	123.67	125.7476	81672500	88514576	127.63
## 26	amd	2022-02-08	128.23	125.8431	84902750	88375660	128.71
## 27	amd	2022-02-09	132.85	126.1026	92948860	88545037	132.96
## 28	amd	2022-02-10	125.77	126.0907	108939900	89273425	131.76
## 29	amd	2022-02-11	113.18	125.6455	164723200	91875142	127.17
## 30	amd	2022-02-14	114.27	125.2663	135146400	93317517	118.37
## 31	amd	2022-02-15	121.47	125.1439	144139700	94956942	121.88
## 32	amd	2022-02-16	117.69	124.9109	119109600	95711713	119.54
## 33	amd	2022-02-17	112.37	124.5309	98179640	95786498	116.98
## 34	amd	2022-02-18	113.83	124.2162	114321200	96331637	115.64
## 35	amd	2022-02-22	115.65	123.9714	141648500	97626404	119.20
## 36	amd	2022-02-23	109.76	123.5767	120299400	98256210	118.65
## 37	amd	2022-02-24	116.61	123.3884	142956600	99464328	116.96
## 38	amd	2022-02-25	121.06	123.3271	127821000	100210557	121.23
## 39	amd	2022-02-28	123.34	123.3274	124666100	100837622	124.61
## 40	amd	2022-03-01	113.83	123.0900	126552200	101480486	122.43
## 41	amd	2022-03-02	118.28	122.9727	118354500	101892048	119.48
## 42	amd	2022-03-03	111.98	122.7110	123916700	102416444	118.26
## 43	amd	2022-03-04	108.41	122.3784	100671300	102375859	113.00
## 44	amd	2022-03-07	102.95	121.9368	92599970	102153680	109.53
## 45	amd	2022-03-08	105.53	121.5722	135348300	102891338	109.90
## 46	amd	2022-03-09	111.05	121.3435	102310300	102878707	111.71
## 47	amd	2022-03-10	106.46	121.0268	102557400	102871871	109.07
## 48	amd	2022-03-11	104.29	120.6781	87584430	102553382	108.19
## 49	amd	2022-03-14	102.25	120.3020	89731680	102291715	105.24
## 50	amd	2022-03-15	109.33	120.0826	112425500	102494391	109.69
## 51	amd	2022-03-16	115.37	119.9902	113689800	102713908	115.42
## 52	amd	2022-03-17	111.69	119.8306	103201700	102723289	114.27
## 53	amd	2022-03-18	113.46	119.7104	105834800	102781997	114.93
## 54	amd	2022-03-21	115.92	119.6402	101905900	102765773	117.57
## 55	amd	2022-03-22	114.78	119.5518	101672600	102745897	117.95
## 56	amd	2022-03-23	113.92	119.4513	90579150	102528634	117.55
## 57	amd	2022-03-24	120.53	119.4702	121961300	102869558	120.55
## 58	amd	2022-03-25	119.67	119.4736	95852380	102748572	121.40
## 59	amd	2022-03-28	120.24	119.4866	92966150	102582768	120.41
## 60	amd	2022-03-29	123.23	119.5490	94143030	102442106	123.71
## 61	amd	2022-03-30	119.22	119.5436	99476950	102393497	125.67
## 62	amd	2022-03-31	109.34	119.3790	147004800	103113034	116.38
## 63	amd	2022-04-01	108.19	119.2014	111867100	103251987	111.42
## 64	amd	2022-04-04	110.53	119.0659	90220030	103048363	110.94
## 65	amd	2022-04-05	106.82	118.8775	79531960	102686572	110.48
## 66	amd	2022-04-06	103.67	118.6471	105256600	102725512	105.74

## 67	amd	2022-04-07	103.72	118.4243	91895530	102563870	105.24
## 68	amd	2022-04-08	101.00	118.1681	92746660	102419500	102.99
## 69	amd	2022-04-11	97.37	117.8667	95527660	102319618	98.67
## 70	amd	2022-04-12	95.10	117.5414	89246450	102132858	99.59
## 71	amd	2022-04-13	97.74	117.2625	77728420	101789134	98.33
## 72	amd	2022-04-14	93.06	116.9264	73354370	101394207	98.39
## 73	amd	2022-04-18	93.89	116.6108	80605750	101109433	95.16
## 74	amd	2022-04-19	96.93	116.3449	77069500	100784569	97.07
## 75	amd	2022-04-20	94.02	116.0472	62489050	100273962	97.91
## 76	amd	2022-04-21	89.85	115.7025	76680640	99963524	96.23
## 77	amd	2022-04-22	88.14	115.3445	75017650	99639551	91.46
## 78	amd	2022-04-25	90.69	115.0285	93481040	99560596	91.37
## 79	amd	2022-04-26	85.16	114.6504	89127400	99428530	90.12
## 80	amd	2022-04-27	84.91	114.2786	83125050	99224737	87.90
## 81	amd	2022-04-28	89.64	113.9744	91495450	99129314	90.58
## 82	amd	2022-04-29	85.52	113.6274	82647700	98928318	91.79
## 83	amd	2022-05-02	89.84	113.3408	98304090	98920797	90.37
## 84	amd	2022-05-03	91.13	113.0764	126381800	99247714	92.21
## 85	amd	2022-05-04	99.42	112.9158	225394100	100731789	99.69
## 86	amd	2022-05-05	93.87	112.6943	153129800	101341068	97.84
## 87	amd	2022-05-06	95.34	112.4948	144286600	101834695	98.18
## 88	amd	2022-05-09	86.36	112.1978	144523700	102319798	93.74
## 89	amd	2022-05-10	88.73	111.9342	137235500	102712109	90.77
## 90	amd	2022-05-11	87.92	111.6673	136137900	103083507	93.46
## 91	amd	2022-05-12	87.06	111.3969	129214200	103370657	88.55
## 92	amd	2022-05-13	95.12	111.2200	138068100	103747803	96.57
## 93	amd	2022-05-16	94.24	111.0374	131065700	104041544	98.17
## 94	amd	2022-05-17	102.47	110.9463	164227200	104681817	103.20
## 95	amd	2022-05-18	96.28	110.7919	142603200	105080989	104.22
## 96	amd	2022-05-19	96.67	110.6448	141506200	105460419	100.69
## 97	amd	2022-05-20	93.50	110.4680	164126800	106065227	98.64
## 98	amd	2022-05-23	95.07	110.3109	128773000	106296939	95.19
## 99	amd	2022-05-24	91.16	110.1175	123341400	106469105	93.42
## 100	amd	2022-05-25	92.65	109.9428	111771100	106522125	93.89
## 101	amd	2022-05-26	98.75	109.8320	128792700	106742626	100.33
## 102	amd	2022-05-27	102.26	109.7577	104348400	106719153	102.40
## 103	amd	2022-05-31	101.86	109.6811	125102900	106897636	104.55
## 104	amd	2022-06-01	101.22	109.5997	99351390	106825076	103.57
## 105	amd	2022-06-02	108.59	109.5901	120953800	106959635	109.50
## 106	amd	2022-06-03	106.30	109.5591	110844700	106996287	109.39
## 107	amd	2022-06-06	105.65	109.5225	96726890	106900311	109.57
## 108	amd	2022-06-07	105.28	109.4832	79022850	106642186	106.24
## 109	amd	2022-06-08	101.90	109.4137	97641870	106559615	105.85
## 110	amd	2022-06-09	98.80	109.3172	95298980	106457245	103.94
## 111	amd	2022-06-10	94.82	109.1866	102212200	106419002	99.93
## 112	amd	2022-06-13	86.99	108.9884	98148810	106345161	92.03
## 113	amd	2022-06-14	86.99	108.7937	84066570	106148005	88.30
## 114	amd	2022-06-15	89.30	108.6227	95774810	106057012	90.86
## 115	amd	2022-06-16	82.05	108.3917	102433300	106025501	86.73
## 116	amd	2022-06-17	81.57	108.1604	105212300	106018491	82.94
## 117	amd	2022-06-21	83.79	107.9521	87780570	105862611	85.81
## 118	amd	2022-06-22	83.75	107.7470	86634720	105699663	86.38
## 119	amd	2022-06-23	82.43	107.5343	100614600	105656932	84.41
## 120	amd	2022-06-24	87.08	107.3638	88553890	105514406	87.53

## 121	amd	2022-06-27	86.16	107.1886	74663490	105259440	88.22
## 122	amd	2022-06-28	80.78	106.9721	95752530	105181514	86.73
## 123	amd	2022-06-29	77.99	106.7365	104140900	105173054	79.75
## 124	amd	2022-06-30	76.47	106.4924	105368600	105174631	78.91
## 125	amd	2022-07-01	73.67	106.2298	87734240	105035108	75.45
## 126	amd	2022-07-05	75.20	105.9836	95685750	104960907	75.21
## 127	amd	2022-07-06	75.35	105.7424	85458860	104807347	76.28
## 128	amd	2022-07-07	79.30	105.5358	83640950	104641985	79.99
## 129	amd	2022-07-08	79.35	105.3328	83405930	104477364	80.47
## 130	amd	2022-07-11	76.95	105.1145	76247540	104260212	78.29
## 131	amd	2022-07-12	76.36	104.8950	77873210	104058784	77.44
## 132	amd	2022-07-13	77.52	104.6876	79354980	103871634	79.11
## 133	amd	2022-07-14	78.60	104.4914	83493650	103718416	79.25
## 134	amd	2022-07-15	81.11	104.3169	76050600	103511940	81.20
## 135	amd	2022-07-18	81.43	104.1474	90464330	103415291	84.47
## 136	amd	2022-07-19	85.88	104.0131	85047510	103280234	86.41
## 137	amd	2022-07-20	89.43	103.9066	88348560	103171244	89.92
## 138	amd	2022-07-21	91.09	103.8138	90449340	103079056	91.58
## 139	amd	2022-07-22	88.10	103.7007	76989700	102891363	90.69
## 140	amd	2022-07-25	87.54	103.5853	70083010	102657017	87.60
## 141	amd	2022-07-26	85.25	103.4552	69180370	102419594	87.75
## 142	amd	2022-07-27	89.82	103.3592	78301560	102249749	90.62
## 143	amd	2022-07-28	91.67	103.2775	79009190	102087228	92.22
## 144	amd	2022-07-29	94.47	103.2163	76630710	101910446	94.81
## 145	amd	2022-08-01	96.78	103.1719	96477500	101872978	98.39
## 146	amd	2022-08-02	99.29	103.1453	116734100	101974766	100.92
## 147	amd	2022-08-03	98.09	103.1110	131142000	102173183	98.77
## 148	amd	2022-08-04	103.91	103.1164	125855800	102333200	104.59
## 149	amd	2022-08-05	102.31	103.1109	93859880	102276332	103.86
## 150	amd	2022-08-08	100.07	103.0907	92692590	102212441	101.80
## 151	amd	2022-08-09	95.54	103.0407	89473660	102128078	98.05
## 152	amd	2022-08-10	99.05	103.0144	83416120	102004973	99.35
## 153	amd	2022-08-11	98.12	102.9824	77516860	101844920	102.37
## 154	amd	2022-08-12	100.83	102.9684	72316350	101653176	101.40
## 155	amd	2022-08-15	101.01	102.9558	61327140	101393008	101.85
## 156	amd	2022-08-16	100.20	102.9381	60220670	101129083	101.45
## 157	amd	2022-08-17	98.27	102.9084	63735580	100890908	99.64
## 158	amd	2022-08-18	100.44	102.8928	76059520	100733747	101.07
## 159	amd	2022-08-19	95.95	102.8491	67221690	100522979	99.25
## 160	amd	2022-08-22	92.84	102.7866	61837280	100281194	95.02
## 161	amd	2022-08-23	92.49	102.7226	52590670	99984979	94.44
## 162	amd	2022-08-24	92.73	102.6609	56520430	99716680	93.38
## 163	amd	2022-08-25	97.18	102.6273	61016200	99479253	97.57
## 164	amd	2022-08-26	91.18	102.5575	65552540	99272383	97.60
## 165	amd	2022-08-29	88.49	102.4722	61142540	99041293	91.19
## 166	amd	2022-08-30	86.94	102.3787	69087120	98860846	90.15
## 167	amd	2022-08-31	84.87	102.2738	64991720	98658037	86.72
## 168	amd	2022-09-01	82.33	102.1551	94854710	98635398	82.76
## 169	amd	2022-09-02	80.24	102.0254	84924450	98554268	83.65
## 170	amd	2022-09-06	78.72	101.8884	68727300	98378816	80.89
## 171	amd	2022-09-07	79.61	101.7581	67891170	98200525	80.25
## 172	amd	2022-09-08	82.78	101.6477	89089300	98147553	83.45
## 173	amd	2022-09-09	85.45	101.5541	68936920	97978706	85.68
##	avg_high	low	avg_low				

## 1	151.6500	145.02	145.02000
## 2	152.0350	140.70	142.86000
## 3	149.2767	135.29	140.33667
## 4	146.4575	131.77	138.19500
## 5	144.6540	131.13	136.78200
## 6	142.6150	125.03	134.82333
## 7	142.0971	131.59	134.36143
## 8	141.9062	135.77	134.53750
## 9	141.8333	131.81	134.23444
## 10	141.3500	131.43	133.95400
## 11	140.8991	131.59	133.73909
## 12	140.3717	128.02	133.26250
## 13	139.4592	121.41	132.35077
## 14	138.4279	118.39	131.35357
## 15	136.9840	107.50	129.76333
## 16	135.5987	109.86	128.51937
## 17	134.5141	108.63	127.34941
## 18	133.3050	101.94	125.93778
## 19	131.8363	99.35	124.53842
## 20	130.9600	106.90	123.65650
## 21	130.3076	112.73	123.13619
## 22	130.2964	120.64	123.02273
## 23	130.0822	118.82	122.84000
## 24	129.8688	118.58	122.66250
## 25	129.7792	122.79	122.66760
## 26	129.7381	122.05	122.64385
## 27	129.8574	127.65	122.82926
## 28	129.9254	124.61	122.89286
## 29	129.8303	111.81	122.51069
## 30	129.4483	113.46	122.20900
## 31	129.2042	114.36	121.95581
## 32	128.9022	114.22	121.71406
## 33	128.5409	112.26	121.42758
## 34	128.1615	109.89	121.08823
## 35	127.9054	113.61	120.87457
## 36	127.6483	109.04	120.54583
## 37	127.3595	104.26	120.10568
## 38	127.1982	116.04	119.99868
## 39	127.1318	119.20	119.97821
## 40	127.0143	112.80	119.79875
## 41	126.8305	113.31	119.64049
## 42	126.6264	111.05	119.43595
## 43	126.3095	106.81	119.14233
## 44	125.9282	102.82	118.77136
## 45	125.5720	100.08	118.35600
## 46	125.2707	106.85	118.10587
## 47	124.9260	103.07	117.78596
## 48	124.5773	104.08	117.50042
## 49	124.1827	101.04	117.16449
## 50	123.8928	101.79	116.85700
## 51	123.7267	109.89	116.72039
## 52	123.5448	109.71	116.58558
## 53	123.3823	110.55	116.47170
## 54	123.2746	112.54	116.39889

## 55	123.1778	113.81	116.35182
## 56	123.0773	112.21	116.27786
## 57	123.0330	113.71	116.23281
## 58	123.0048	117.25	116.25034
## 59	122.9608	116.71	116.25814
## 60	122.9733	119.59	116.31367
## 61	123.0175	118.59	116.35098
## 62	122.9105	109.02	116.23274
## 63	122.7281	106.10	116.07191
## 64	122.5439	107.03	115.93063
## 65	122.3583	106.05	115.77862
## 66	122.1065	101.71	115.56546
## 67	121.8548	100.91	115.34672
## 68	121.5774	100.42	115.12721
## 69	121.2454	95.94	114.84913
## 70	120.9360	94.60	114.55986
## 71	120.6176	94.71	114.28028
## 72	120.3089	92.92	113.98361
## 73	119.9644	91.64	113.67753
## 74	119.6550	92.84	113.39595
## 75	119.3651	93.20	113.12667
## 76	119.0607	89.24	112.81237
## 77	118.7022	87.94	112.48935
## 78	118.3518	88.61	112.18321
## 79	117.9944	85.08	111.84013
## 80	117.6183	84.02	111.49237
## 81	117.2844	84.78	111.16259
## 82	116.9735	85.38	110.84817
## 83	116.6530	85.32	110.54060
## 84	116.3620	89.01	110.28429
## 85	116.1659	91.70	110.06565
## 86	115.9528	92.17	109.85756
## 87	115.7485	92.65	109.65977
## 88	115.4984	85.38	109.38386
## 89	115.2206	85.41	109.11449
## 90	114.9788	86.53	108.86356
## 91	114.6884	83.27	108.58231
## 92	114.4914	88.22	108.36098
## 93	114.3159	93.08	108.19667
## 94	114.1977	97.54	108.08330
## 95	114.0926	95.71	107.95305
## 96	113.9530	95.09	107.81906
## 97	113.7952	88.26	107.61742
## 98	113.6053	90.92	107.44704
## 99	113.4014	89.62	107.26697
## 100	113.2063	89.52	107.08950
## 101	113.0788	90.74	106.92762
## 102	112.9741	99.38	106.85363
## 103	112.8923	100.04	106.78748
## 104	112.8027	99.55	106.71788
## 105	112.7712	100.78	106.66133
## 106	112.7393	104.65	106.64236
## 107	112.7097	104.23	106.61981
## 108	112.6498	102.61	106.58268

```

## 109 112.5874 100.41 106.52605
## 110 112.5088 98.74 106.45527
## 111 112.3955 94.25 106.34531
## 112 112.2137 86.64 106.16938
## 113 112.0020 85.82 105.98929
## 114 111.8166 86.19 105.81561
## 115 111.5984 80.64 105.59670
## 116 111.3514 79.43 105.37112
## 117 111.1331 82.60 105.17650
## 118 110.9233 83.30 104.99110
## 119 110.7005 80.23 104.78302
## 120 110.5074 83.08 104.60217
## 121 110.3232 85.25 104.44223
## 122 110.1298 80.43 104.24541
## 123 109.8828 76.51 104.01992
## 124 109.6331 75.48 103.78976
## 125 109.3596 72.69 103.54096
## 126 109.0886 71.60 103.28746
## 127 108.8302 73.55 103.05331
## 128 108.6049 76.90 102.84898
## 129 108.3868 77.40 102.65171
## 130 108.1553 75.84 102.44546
## 131 107.9208 74.43 102.23160
## 132 107.7026 74.48 102.02136
## 133 107.4886 76.00 101.82571
## 134 107.2925 77.90 101.64716
## 135 107.1234 80.94 101.49378
## 136 106.9711 82.19 101.35184
## 137 106.8466 85.08 101.23307
## 138 106.7360 88.22 101.13877
## 139 106.6206 87.04 101.03734
## 140 106.4847 85.12 100.92364
## 141 106.3518 84.71 100.80865
## 142 106.2411 86.29 100.70641
## 143 106.1430 88.59 100.62168
## 144 106.0643 90.56 100.55181
## 145 106.0114 93.96 100.50634
## 146 105.9765 95.36 100.47110
## 147 105.9275 93.62 100.42449
## 148 105.9184 97.26 100.40311
## 149 105.9046 100.98 100.40698
## 150 105.8773 97.99 100.39087
## 151 105.8254 93.67 100.34636
## 152 105.7828 95.61 100.31520
## 153 105.7605 98.00 100.30007
## 154 105.7322 98.48 100.28825
## 155 105.7072 99.80 100.28510
## 156 105.6799 98.32 100.27250
## 157 105.6414 96.73 100.24994
## 158 105.6125 96.73 100.22766
## 159 105.5725 94.59 100.19220
## 160 105.5065 92.36 100.14325
## 161 105.4378 92.11 100.09335
## 162 105.3633 90.90 100.03660

```



```
## 163 105.3155 93.14 99.99429
## 164 105.2685 91.12 99.94018
## 165 105.1832 88.26 99.86939
## 166 105.0926 85.34 99.78187
## 167 104.9826 83.72 99.68569
## 168 104.8503 78.52 99.55970
## 169 104.7249 79.81 99.44284
## 170 104.5846 78.37 99.31888
## 171 104.4423 77.74 99.19269
## 172 104.3203 79.24 99.07669
## 173 104.2125 83.84 98.98861
```

R for amd

```
ytd <- dfsp[order(dfsp$tradingdate),
  c('symbol', 'tradingdate', 'closeprice', 'high')] %>%
  filter(symbol == 'amd') %>%
  mutate (
    ytd_closeprice = cummean(closeprice),
    ytd_high = cummean(high)
  )
print(ytd[, c('symbol', 'tradingdate', 'closeprice', 'ytd_closeprice', 'high', 'ytd_high')])
```

##	symbol	tradingdate	closeprice	ytd_closeprice	high	ytd_high
## 1	amd	2022-01-03	150.24	150.2400	151.65	151.6500
## 2	amd	2022-01-04	144.42	147.3300	152.42	152.0350
## 3	amd	2022-01-05	136.15	143.6033	143.76	149.2767
## 4	amd	2022-01-06	136.23	141.7600	138.00	146.4575
## 5	amd	2022-01-07	132.00	139.8080	137.44	144.6540
## 6	amd	2022-01-10	132.00	138.5067	132.42	142.6150
## 7	amd	2022-01-11	137.31	138.3357	138.99	142.0971
## 8	amd	2022-01-12	137.47	138.2275	140.57	141.9062
## 9	amd	2022-01-13	132.74	137.6178	141.25	141.8333
## 10	amd	2022-01-14	136.88	137.5440	137.00	141.3500
## 11	amd	2022-01-18	131.93	137.0336	136.39	140.8991
## 12	amd	2022-01-19	128.27	136.3033	134.57	140.3717
## 13	amd	2022-01-20	121.89	135.1946	128.51	139.4592
## 14	amd	2022-01-21	118.81	134.0243	125.02	138.4279
## 15	amd	2022-01-24	116.53	132.8580	116.77	136.9840
## 16	amd	2022-01-25	111.13	131.5000	114.82	135.5987
## 17	amd	2022-01-26	110.71	130.2771	117.16	134.5141
## 18	amd	2022-01-27	102.60	128.7394	112.75	133.3050
## 19	amd	2022-01-28	105.24	127.5026	105.40	131.8363
## 20	amd	2022-01-31	114.25	126.8400	114.31	130.9600
## 21	amd	2022-02-01	116.78	126.3610	117.26	130.3076
## 22	amd	2022-02-02	122.76	126.1973	130.06	130.2964
## 23	amd	2022-02-03	120.08	125.9313	125.37	130.0822
## 24	amd	2022-02-04	123.60	125.8342	124.96	129.8688
## 25	amd	2022-02-07	123.67	125.7476	127.63	129.7792
## 26	amd	2022-02-08	128.23	125.8431	128.71	129.7381
## 27	amd	2022-02-09	132.85	126.1026	132.96	129.8574
## 28	amd	2022-02-10	125.77	126.0907	131.76	129.9254
## 29	amd	2022-02-11	113.18	125.6455	127.17	129.8303

## 30	amd	2022-02-14	114.27	125.2663	118.37	129.4483
## 31	amd	2022-02-15	121.47	125.1439	121.88	129.2042
## 32	amd	2022-02-16	117.69	124.9109	119.54	128.9022
## 33	amd	2022-02-17	112.37	124.5309	116.98	128.5409
## 34	amd	2022-02-18	113.83	124.2162	115.64	128.1615
## 35	amd	2022-02-22	115.65	123.9714	119.20	127.9054
## 36	amd	2022-02-23	109.76	123.5767	118.65	127.6483
## 37	amd	2022-02-24	116.61	123.3884	116.96	127.3595
## 38	amd	2022-02-25	121.06	123.3271	121.23	127.1982
## 39	amd	2022-02-28	123.34	123.3274	124.61	127.1318
## 40	amd	2022-03-01	113.83	123.0900	122.43	127.0142
## 41	amd	2022-03-02	118.28	122.9727	119.48	126.8305
## 42	amd	2022-03-03	111.98	122.7110	118.26	126.6264
## 43	amd	2022-03-04	108.41	122.3784	113.00	126.3095
## 44	amd	2022-03-07	102.95	121.9368	109.53	125.9282
## 45	amd	2022-03-08	105.53	121.5722	109.90	125.5720
## 46	amd	2022-03-09	111.05	121.3435	111.71	125.2707
## 47	amd	2022-03-10	106.46	121.0268	109.07	124.9260
## 48	amd	2022-03-11	104.29	120.6781	108.19	124.5773
## 49	amd	2022-03-14	102.25	120.3020	105.24	124.1827
## 50	amd	2022-03-15	109.33	120.0826	109.69	123.8928
## 51	amd	2022-03-16	115.37	119.9902	115.42	123.7267
## 52	amd	2022-03-17	111.69	119.8306	114.27	123.5448
## 53	amd	2022-03-18	113.46	119.7104	114.93	123.3823
## 54	amd	2022-03-21	115.92	119.6402	117.57	123.2746
## 55	amd	2022-03-22	114.78	119.5518	117.95	123.1778
## 56	amd	2022-03-23	113.92	119.4512	117.55	123.0773
## 57	amd	2022-03-24	120.53	119.4702	120.55	123.0330
## 58	amd	2022-03-25	119.67	119.4736	121.40	123.0048
## 59	amd	2022-03-28	120.24	119.4866	120.41	122.9608
## 60	amd	2022-03-29	123.23	119.5490	123.71	122.9733
## 61	amd	2022-03-30	119.22	119.5436	125.67	123.0175
## 62	amd	2022-03-31	109.34	119.3790	116.38	122.9105
## 63	amd	2022-04-01	108.19	119.2014	111.42	122.7281
## 64	amd	2022-04-04	110.53	119.0659	110.94	122.5439
## 65	amd	2022-04-05	106.82	118.8775	110.48	122.3583
## 66	amd	2022-04-06	103.67	118.6471	105.74	122.1065
## 67	amd	2022-04-07	103.72	118.4243	105.24	121.8548
## 68	amd	2022-04-08	101.00	118.1681	102.99	121.5774
## 69	amd	2022-04-11	97.37	117.8667	98.67	121.2454
## 70	amd	2022-04-12	95.10	117.5414	99.59	120.9360
## 71	amd	2022-04-13	97.74	117.2625	98.33	120.6176
## 72	amd	2022-04-14	93.06	116.9264	98.39	120.3089
## 73	amd	2022-04-18	93.89	116.6108	95.16	119.9644
## 74	amd	2022-04-19	96.93	116.3449	97.07	119.6550
## 75	amd	2022-04-20	94.02	116.0472	97.91	119.3651
## 76	amd	2022-04-21	89.85	115.7025	96.23	119.0607
## 77	amd	2022-04-22	88.14	115.3445	91.46	118.7022
## 78	amd	2022-04-25	90.69	115.0285	91.37	118.3518
## 79	amd	2022-04-26	85.16	114.6504	90.12	117.9944
## 80	amd	2022-04-27	84.91	114.2786	87.90	117.6182
## 81	amd	2022-04-28	89.64	113.9744	90.58	117.2844
## 82	amd	2022-04-29	85.52	113.6274	91.79	116.9735
## 83	amd	2022-05-02	89.84	113.3408	90.37	116.6530

## 84	amd	2022-05-03	91.13	113.0764	92.21	116.3620
## 85	amd	2022-05-04	99.42	112.9158	99.69	116.1659
## 86	amd	2022-05-05	93.87	112.6943	97.84	115.9528
## 87	amd	2022-05-06	95.34	112.4948	98.18	115.7485
## 88	amd	2022-05-09	86.36	112.1978	93.74	115.4984
## 89	amd	2022-05-10	88.73	111.9342	90.77	115.2206
## 90	amd	2022-05-11	87.92	111.6673	93.46	114.9788
## 91	amd	2022-05-12	87.06	111.3969	88.55	114.6884
## 92	amd	2022-05-13	95.12	111.2200	96.57	114.4914
## 93	amd	2022-05-16	94.24	111.0374	98.17	114.3159
## 94	amd	2022-05-17	102.47	110.9463	103.20	114.1977
## 95	amd	2022-05-18	96.28	110.7919	104.22	114.0926
## 96	amd	2022-05-19	96.67	110.6448	100.69	113.9530
## 97	amd	2022-05-20	93.50	110.4680	98.64	113.7952
## 98	amd	2022-05-23	95.07	110.3109	95.19	113.6053
## 99	amd	2022-05-24	91.16	110.1175	93.42	113.4014
## 100	amd	2022-05-25	92.65	109.9428	93.89	113.2063
## 101	amd	2022-05-26	98.75	109.8320	100.33	113.0788
## 102	amd	2022-05-27	102.26	109.7577	102.40	112.9741
## 103	amd	2022-05-31	101.86	109.6811	104.55	112.8923
## 104	amd	2022-06-01	101.22	109.5997	103.57	112.8027
## 105	amd	2022-06-02	108.59	109.5901	109.50	112.7712
## 106	amd	2022-06-03	106.30	109.5591	109.39	112.7393
## 107	amd	2022-06-06	105.65	109.5225	109.57	112.7097
## 108	amd	2022-06-07	105.28	109.4832	106.24	112.6498
## 109	amd	2022-06-08	101.90	109.4137	105.85	112.5874
## 110	amd	2022-06-09	98.80	109.3172	103.94	112.5088
## 111	amd	2022-06-10	94.82	109.1866	99.93	112.3955
## 112	amd	2022-06-13	86.99	108.9884	92.03	112.2137
## 113	amd	2022-06-14	86.99	108.7937	88.30	112.0020
## 114	amd	2022-06-15	89.30	108.6227	90.86	111.8166
## 115	amd	2022-06-16	82.05	108.3917	86.73	111.5984
## 116	amd	2022-06-17	81.57	108.1604	82.94	111.3514
## 117	amd	2022-06-21	83.79	107.9521	85.81	111.1331
## 118	amd	2022-06-22	83.75	107.7470	86.38	110.9233
## 119	amd	2022-06-23	82.43	107.5343	84.41	110.7005
## 120	amd	2022-06-24	87.08	107.3638	87.53	110.5074
## 121	amd	2022-06-27	86.16	107.1886	88.22	110.3232
## 122	amd	2022-06-28	80.78	106.9721	86.73	110.1298
## 123	amd	2022-06-29	77.99	106.7365	79.75	109.8828
## 124	amd	2022-06-30	76.47	106.4924	78.91	109.6331
## 125	amd	2022-07-01	73.67	106.2298	75.45	109.3596
## 126	amd	2022-07-05	75.20	105.9836	75.21	109.0886
## 127	amd	2022-07-06	75.35	105.7424	76.28	108.8302
## 128	amd	2022-07-07	79.30	105.5358	79.99	108.6049
## 129	amd	2022-07-08	79.35	105.3328	80.47	108.3868
## 130	amd	2022-07-11	76.95	105.1145	78.29	108.1553
## 131	amd	2022-07-12	76.36	104.8950	77.44	107.9208
## 132	amd	2022-07-13	77.52	104.6876	79.11	107.7026
## 133	amd	2022-07-14	78.60	104.4914	79.25	107.4886
## 134	amd	2022-07-15	81.11	104.3169	81.20	107.2925
## 135	amd	2022-07-18	81.43	104.1474	84.47	107.1234
## 136	amd	2022-07-19	85.88	104.0131	86.41	106.9711
## 137	amd	2022-07-20	89.43	103.9066	89.92	106.8466

## 138	amd	2022-07-21	91.09	103.8138	91.58	106.7360
## 139	amd	2022-07-22	88.10	103.7007	90.69	106.6206
## 140	amd	2022-07-25	87.54	103.5853	87.60	106.4847
## 141	amd	2022-07-26	85.25	103.4552	87.75	106.3518
## 142	amd	2022-07-27	89.82	103.3592	90.62	106.2411
## 143	amd	2022-07-28	91.67	103.2775	92.22	106.1430
## 144	amd	2022-07-29	94.47	103.2163	94.81	106.0643
## 145	amd	2022-08-01	96.78	103.1719	98.39	106.0114
## 146	amd	2022-08-02	99.29	103.1453	100.92	105.9765
## 147	amd	2022-08-03	98.09	103.1110	98.77	105.9275
## 148	amd	2022-08-04	103.91	103.1164	104.59	105.9184
## 149	amd	2022-08-05	102.31	103.1109	103.86	105.9046
## 150	amd	2022-08-08	100.07	103.0907	101.80	105.8773
## 151	amd	2022-08-09	95.54	103.0407	98.05	105.8254
## 152	amd	2022-08-10	99.05	103.0144	99.35	105.7828
## 153	amd	2022-08-11	98.12	102.9824	102.37	105.7605
## 154	amd	2022-08-12	100.83	102.9684	101.40	105.7322
## 155	amd	2022-08-15	101.01	102.9558	101.85	105.7072
## 156	amd	2022-08-16	100.20	102.9381	101.45	105.6799
## 157	amd	2022-08-17	98.27	102.9084	99.64	105.6414
## 158	amd	2022-08-18	100.44	102.8928	101.07	105.6125
## 159	amd	2022-08-19	95.95	102.8491	99.25	105.5725
## 160	amd	2022-08-22	92.84	102.7866	95.02	105.5065
## 161	amd	2022-08-23	92.49	102.7226	94.44	105.4378
## 162	amd	2022-08-24	92.73	102.6609	93.38	105.3633
## 163	amd	2022-08-25	97.18	102.6273	97.57	105.3155
## 164	amd	2022-08-26	91.18	102.5575	97.60	105.2685
## 165	amd	2022-08-29	88.49	102.4722	91.19	105.1832
## 166	amd	2022-08-30	86.94	102.3787	90.15	105.0926
## 167	amd	2022-08-31	84.87	102.2738	86.72	104.9826
## 168	amd	2022-09-01	82.33	102.1551	82.76	104.8503
## 169	amd	2022-09-02	80.24	102.0254	83.65	104.7249
## 170	amd	2022-09-06	78.72	101.8884	80.89	104.5846
## 171	amd	2022-09-07	79.61	101.7581	80.25	104.4423
## 172	amd	2022-09-08	82.78	101.6477	83.45	104.3203
## 173	amd	2022-09-09	85.45	101.5541	85.68	104.2125

R for intc

```

ytd <- dfsp[order(dfsp$tradingdate),
  c('symbol', 'tradingdate', 'closeprice', 'high')] %>%
  filter(symbol == 'intc') %>%
  mutate (
    ytd_closeprice = cummean(closeprice),
    ytd_high = cummean(high)
  )
print(ytd[, c('symbol','tradingdate','closeprice','ytd_closeprice','high','ytd_high')])

```

##	symbol	tradingdate	closeprice	ytd_closeprice	high	ytd_high
## 1	intc	2022-01-03	53.21	53.21000	53.2300	53.23000
## 2	intc	2022-01-04	53.14	53.17500	53.9350	53.58250
## 3	intc	2022-01-05	53.87	53.40667	56.1700	54.44500
## 4	intc	2022-01-06	54.01	53.55750	54.6700	54.50125

## 5	intc	2022-01-07	53.44	53.53400	54.3900	54.47900
## 6	intc	2022-01-10	55.21	53.81333	55.3100	54.61750
## 7	intc	2022-01-11	55.91	54.11286	56.0800	54.82643
## 8	intc	2022-01-12	55.74	54.31625	56.2800	55.00812
## 9	intc	2022-01-13	54.94	54.38556	56.2100	55.14167
## 10	intc	2022-01-14	55.70	54.51700	55.7700	55.20450
## 11	intc	2022-01-18	54.76	54.53909	55.6500	55.24500
## 12	intc	2022-01-19	53.62	54.46250	54.8500	55.21208
## 13	intc	2022-01-20	52.04	54.27615	54.0850	55.12538
## 14	intc	2022-01-21	52.04	54.11643	53.1299	54.98285
## 15	intc	2022-01-24	51.94	53.97133	52.1291	54.79260
## 16	intc	2022-01-25	51.00	53.78562	51.6200	54.59431
## 17	intc	2022-01-26	51.69	53.66235	52.7200	54.48406
## 18	intc	2022-01-27	48.05	53.35056	50.0600	54.23828
## 19	intc	2022-01-28	47.73	53.05474	48.2000	53.92047
## 20	intc	2022-01-31	48.82	52.84300	48.8700	53.66795
## 21	intc	2022-02-01	48.95	52.65762	49.0300	53.44710
## 22	intc	2022-02-02	49.51	52.51455	49.5800	53.27132
## 23	intc	2022-02-03	48.28	52.33043	49.6850	53.11539
## 24	intc	2022-02-04	48.01	52.15042	48.2399	52.91225
## 25	intc	2022-02-07	48.18	51.99160	48.6600	52.74216
## 26	intc	2022-02-08	48.81	51.86923	48.9400	52.59592
## 27	intc	2022-02-09	49.91	51.79667	49.9700	52.49866
## 28	intc	2022-02-10	48.86	51.69179	49.9325	52.40701
## 29	intc	2022-02-11	47.63	51.55172	49.1100	52.29332
## 30	intc	2022-02-14	47.58	51.41933	48.1772	52.15612
## 31	intc	2022-02-15	48.44	51.32323	48.4600	52.03689
## 32	intc	2022-02-16	48.23	51.22656	48.4900	51.92605
## 33	intc	2022-02-17	47.57	51.11576	48.2600	51.81496
## 34	intc	2022-02-18	45.04	50.93706	46.2100	51.65011
## 35	intc	2022-02-22	44.69	50.75857	45.4050	51.47167
## 36	intc	2022-02-23	44.65	50.58889	45.7100	51.31163
## 37	intc	2022-02-24	46.72	50.48432	46.7900	51.18942
## 38	intc	2022-02-25	47.71	50.41132	47.7900	51.09996
## 39	intc	2022-02-28	47.70	50.34179	47.8200	51.01586
## 40	intc	2022-03-01	46.82	50.25375	47.9000	50.93796
## 41	intc	2022-03-02	48.87	50.22000	48.9900	50.89045
## 42	intc	2022-03-03	47.93	50.16548	48.5500	50.83473
## 43	intc	2022-03-04	48.07	50.11674	48.2650	50.77497
## 44	intc	2022-03-07	47.68	50.06136	48.5400	50.72417
## 45	intc	2022-03-08	47.50	50.00444	48.7200	50.67964
## 46	intc	2022-03-09	47.63	49.95283	48.4600	50.63138
## 47	intc	2022-03-10	46.66	49.88277	47.3100	50.56071
## 48	intc	2022-03-11	45.83	49.79833	47.2750	50.49226
## 49	intc	2022-03-14	44.40	49.68816	45.9800	50.40018
## 50	intc	2022-03-15	44.81	49.59060	44.9000	50.29017
## 51	intc	2022-03-16	46.63	49.53255	46.6300	50.21840
## 52	intc	2022-03-17	47.14	49.48654	47.2873	50.16204
## 53	intc	2022-03-18	47.45	49.44811	47.6000	50.11370
## 54	intc	2022-03-21	47.39	49.41000	47.8900	50.07252
## 55	intc	2022-03-22	48.39	49.39145	48.4700	50.04338
## 56	intc	2022-03-23	48.27	49.37143	49.5800	50.03511
## 57	intc	2022-03-24	51.62	49.41088	51.6500	50.06344
## 58	intc	2022-03-25	51.83	49.45259	51.9783	50.09645

## 59	intc	2022-03-28	51.51	49.48746	51.5700	50.12143
## 60	intc	2022-03-29	52.25	49.53350	52.2900	50.15757
## 61	intc	2022-03-30	51.43	49.56459	52.5100	50.19613
## 62	intc	2022-03-31	49.56	49.56452	51.2600	50.21329
## 63	intc	2022-04-01	48.11	49.54143	49.9000	50.20832
## 64	intc	2022-04-04	49.20	49.53609	49.2300	50.19303
## 65	intc	2022-04-05	48.13	49.51446	48.9800	50.17437
## 66	intc	2022-04-06	47.54	49.48455	48.1700	50.14400
## 67	intc	2022-04-07	47.56	49.45582	47.9100	50.11066
## 68	intc	2022-04-08	47.02	49.42000	47.5800	50.07344
## 69	intc	2022-04-11	46.57	49.37870	47.2950	50.03318
## 70	intc	2022-04-12	46.50	49.33757	47.9100	50.00285
## 71	intc	2022-04-13	47.01	49.30479	47.2687	49.96434
## 72	intc	2022-04-14	45.67	49.25431	46.7500	49.91969
## 73	intc	2022-04-18	46.64	49.21849	46.8900	49.87819
## 74	intc	2022-04-19	47.93	49.20108	48.0000	49.85281
## 75	intc	2022-04-20	48.11	49.18653	48.7500	49.83811
## 76	intc	2022-04-21	47.50	49.16434	48.9000	49.82576
## 77	intc	2022-04-22	46.54	49.13026	47.6500	49.79751
## 78	intc	2022-04-25	47.06	49.10372	47.1400	49.76343
## 79	intc	2022-04-26	45.52	49.05835	46.8400	49.72643
## 80	intc	2022-04-27	45.22	49.01037	46.0600	49.68060
## 81	intc	2022-04-28	46.84	48.98358	47.2700	49.65084
## 82	intc	2022-04-29	43.59	48.91780	45.3600	49.59851
## 83	intc	2022-05-02	44.96	48.87012	44.9900	49.54299
## 84	intc	2022-05-03	45.06	48.82476	45.4900	49.49474
## 85	intc	2022-05-04	46.54	48.79788	46.6400	49.46115
## 86	intc	2022-05-05	44.60	48.74907	45.9100	49.41986
## 87	intc	2022-05-06	44.30	48.69793	45.1500	49.37078
## 88	intc	2022-05-09	43.07	48.63398	44.2000	49.31202
## 89	intc	2022-05-10	44.01	48.58202	44.7350	49.26059
## 90	intc	2022-05-11	42.83	48.51811	44.2900	49.20537
## 91	intc	2022-05-12	42.84	48.45571	42.9050	49.13613
## 92	intc	2022-05-13	43.60	48.40293	43.8400	49.07856
## 93	intc	2022-05-16	43.08	48.34570	43.6099	49.01976
## 94	intc	2022-05-17	44.40	48.30372	44.4200	48.97083
## 95	intc	2022-05-18	42.35	48.24105	43.9800	48.91829
## 96	intc	2022-05-19	42.01	48.17615	42.7000	48.85352
## 97	intc	2022-05-20	41.65	48.10887	42.2900	48.78585
## 98	intc	2022-05-23	42.00	48.04653	42.2500	48.71916
## 99	intc	2022-05-24	41.67	47.98212	41.8900	48.65018
## 100	intc	2022-05-25	42.20	47.92430	42.5150	48.58883
## 101	intc	2022-05-26	43.48	47.88030	43.6800	48.54023
## 102	intc	2022-05-27	44.55	47.84765	44.5500	48.50111
## 103	intc	2022-05-31	44.42	47.81437	44.7500	48.46469
## 104	intc	2022-06-01	44.11	47.77875	44.9300	48.43070
## 105	intc	2022-06-02	44.84	47.75076	44.8800	48.39688
## 106	intc	2022-06-03	43.39	47.70962	44.2458	48.35772
## 107	intc	2022-06-06	43.34	47.66879	44.0400	48.31737
## 108	intc	2022-06-07	43.53	47.63046	43.5900	48.27360
## 109	intc	2022-06-08	41.23	47.57174	42.2600	48.21843
## 110	intc	2022-06-09	40.01	47.50300	41.3500	48.15599
## 111	intc	2022-06-10	39.18	47.42802	40.0800	48.08323
## 112	intc	2022-06-13	37.77	47.34179	38.8100	48.00043

## 113	intc	2022-06-14	37.93	47.25850	38.2000	47.91370
## 114	intc	2022-06-15	38.65	47.18298	39.1700	47.83701
## 115	intc	2022-06-16	37.34	47.09739	37.7900	47.74964
## 116	intc	2022-06-17	36.97	47.01009	38.1200	47.66663
## 117	intc	2022-06-21	37.73	46.93077	38.0250	47.58422
## 118	intc	2022-06-22	37.38	46.84983	37.7700	47.50105
## 119	intc	2022-06-23	37.41	46.77050	37.6200	47.41801
## 120	intc	2022-06-24	38.61	46.70250	38.6400	47.34486
## 121	intc	2022-06-27	38.63	46.63579	39.0600	47.27639
## 122	intc	2022-06-28	37.78	46.56320	39.0200	47.20872
## 123	intc	2022-06-29	37.29	46.48780	37.5950	47.13056
## 124	intc	2022-06-30	37.41	46.41460	38.0000	47.05692
## 125	intc	2022-07-01	36.34	46.33400	37.2000	46.97807
## 126	intc	2022-07-05	36.69	46.25746	36.7400	46.89681
## 127	intc	2022-07-06	36.99	46.18449	37.4250	46.82223
## 128	intc	2022-07-07	38.14	46.12164	38.3300	46.75589
## 129	intc	2022-07-08	37.99	46.05860	38.1400	46.68910
## 130	intc	2022-07-11	37.20	45.99046	37.6750	46.61976
## 131	intc	2022-07-12	37.21	45.92344	37.7000	46.55167
## 132	intc	2022-07-13	37.21	45.85742	37.4299	46.48256
## 133	intc	2022-07-14	37.71	45.79617	38.1550	46.41995
## 134	intc	2022-07-15	38.62	45.74261	38.6700	46.36212
## 135	intc	2022-07-18	38.71	45.69052	39.3400	46.31010
## 136	intc	2022-07-19	40.22	45.65029	40.7300	46.26907
## 137	intc	2022-07-20	40.56	45.61314	40.6700	46.22820
## 138	intc	2022-07-21	40.61	45.57688	40.6450	46.18774
## 139	intc	2022-07-22	39.20	45.53101	40.5100	46.14690
## 140	intc	2022-07-25	39.16	45.48550	39.4100	46.09878
## 141	intc	2022-07-26	38.96	45.43922	39.5650	46.05244
## 142	intc	2022-07-27	40.18	45.40218	40.4250	46.01281
## 143	intc	2022-07-28	39.71	45.36238	40.1200	45.97160
## 144	intc	2022-07-29	36.31	45.29951	36.6200	45.90666
## 145	intc	2022-08-01	36.96	45.24200	37.6900	45.84999
## 146	intc	2022-08-02	36.01	45.17877	36.6600	45.78704
## 147	intc	2022-08-03	36.52	45.11986	36.5900	45.72448
## 148	intc	2022-08-04	35.66	45.05595	36.1000	45.65945
## 149	intc	2022-08-05	35.39	44.99107	35.6900	45.59254
## 150	intc	2022-08-08	35.38	44.92700	35.9600	45.52832
## 151	intc	2022-08-09	34.52	44.85808	35.3000	45.46059
## 152	intc	2022-08-10	35.37	44.79566	35.4000	45.39440
## 153	intc	2022-08-11	35.59	44.73549	36.2900	45.33489
## 154	intc	2022-08-12	36.11	44.67948	36.1400	45.27519
## 155	intc	2022-08-15	36.34	44.62568	36.4300	45.21812
## 156	intc	2022-08-16	36.19	44.57160	36.5750	45.16271
## 157	intc	2022-08-17	35.78	44.51561	36.0750	45.10483
## 158	intc	2022-08-18	36.20	44.46297	36.3300	45.04929
## 159	intc	2022-08-19	35.38	44.40585	36.0250	44.99254
## 160	intc	2022-08-22	33.84	44.33981	35.0600	44.93046
## 161	intc	2022-08-23	33.95	44.27528	34.3900	44.86499
## 162	intc	2022-08-24	33.86	44.21099	33.9900	44.79786
## 163	intc	2022-08-25	34.89	44.15380	34.9300	44.73732
## 164	intc	2022-08-26	33.36	44.08799	35.0250	44.67810
## 165	intc	2022-08-29	32.94	44.02042	33.4100	44.60981
## 166	intc	2022-08-30	32.26	43.94958	33.0700	44.54029

```
## 167   intc  2022-08-31      31.92      43.87754 32.3850 44.46751
## 168   intc  2022-09-01      31.76      43.80542 31.8250 44.39225
## 169   intc  2022-09-02      31.22      43.73095 32.3750 44.32114
## 170   intc  2022-09-06      30.36      43.65229 31.3900 44.24508
## 171   intc  2022-09-07      30.65      43.57626 30.7850 44.16637
## 172   intc  2022-09-08      30.75      43.50169 30.8469 44.08893
## 173   intc  2022-09-09      31.46      43.43208 31.5000 44.01616
```

## Six day Moving Average

Sql

```
dfamdsixdaymoving <- DBI::dbGetQuery(con,
"select
  symbol, tradingdate,
  closeprice, avg(closeprice) over (order by tradingdate rows between 5 preceding and current row) as
  volume, avg(volume) over (order by tradingdate rows between 5 preceding and current row) as sdm_avg_
  high, avg(high) over (order by tradingdate rows between 5 preceding and current row) as sdm_avg_high
  low, avg(low) over (order by tradingdate rows between 5 preceding and current row) as sdm_avg_low
from
  sp
where
  symbol = 'amd' and tradingdate <= '2022-01-10'
order by
  symbol, tradingdate asc;")
```

```
## Warning in .local(conn, statement, ...): Decimal MySQL column 5 imported as
## numeric
```

```
dfamdsixdaymoving
```

```
##   symbol tradingdate closeprice smd_avg_price  volume sdm_avg_volume  high
## 1   amd  2022-01-03      150.24      150.2400 59477670      59477670 151.65
## 2   amd  2022-01-04      144.42      147.3300 80200460      69839065 152.42
## 3   amd  2022-01-05      136.15      143.6033 65403170      68360433 143.76
## 4   amd  2022-01-06      136.23      141.7600 64802940      67471060 138.00
## 5   amd  2022-01-07      132.00      139.8080 58441100      65665068 137.44
## 6   amd  2022-01-10      132.00      138.5067 84671340      68832780 132.42
##   sdm_avg_high  low sdm_avg_low
## 1      151.6500 145.02      145.0200
## 2      152.0350 140.70      142.8600
## 3      149.2767 135.29      140.3367
## 4      146.4575 131.77      138.1950
## 5      144.6540 131.13      136.7820
## 6      142.6150 125.03      134.8233
```

R for amd

```
moving_avg <- function(x, n) {
  res <- c()
  for(i in 1:length(x)){
```



```

    res <- c(res, ifelse(i < n, mean(x[1:i]), mean(x[(i-(n-1)):i])))
  }
  return(res)
}

dfsixdaymoving <- dfsp %>%
  filter(tradingdate < "2022-01-10" & symbol == 'amd') %>%
  mutate (
    moving_avg = moving_avg(closeprice, 6)
  )

print(dfsixdaymoving)

```

	tradingdate	closeprice	volume	open	high	low	symbol	moving_avg
## 1	2022-01-07	132.00	58441100	136.28	137.44	131.13	amd	132.0000
## 2	2022-01-06	136.23	64802940	136.19	138.00	131.77	amd	134.1150
## 3	2022-01-05	136.15	65403170	142.82	143.76	135.29	amd	134.7933
## 4	2022-01-04	144.42	80200460	151.01	152.42	140.70	amd	137.2000
## 5	2022-01-03	150.24	59477670	145.14	151.65	145.02	amd	139.8080

R for intc

```

moving_avg <- function(x, n) {
  res <- c()
  for(i in 1:length(x)){
    res <- c(res, ifelse(i < n, mean(x[1:i]), mean(x[(i-(n-1)):i])))
  }
  return(res)
}

dfsixdaymoving <- dfsp %>%
  filter(tradingdate < "2022-01-10" & symbol == 'intc') %>%
  mutate (
    moving_avg = moving_avg(closeprice, 6)
  )

print(dfsixdaymoving)

```

	tradingdate	closeprice	volume	open	high	low	symbol	moving_avg
## 1	2022-01-07	53.44	30717220	54.190	54.390	53.150	intc	53.44000
## 2	2022-01-06	54.01	35757880	54.610	54.670	53.415	intc	53.72500
## 3	2022-01-05	53.87	59109320	54.188	56.170	53.830	intc	53.77333
## 4	2022-01-04	53.14	45681380	53.570	53.935	52.650	intc	53.61500
## 5	2022-01-03	53.21	33892930	51.650	53.230	51.600	intc	53.53400

The argument transmitted as a function in mutate is an object or a variable.

For example, if the column name is closeprice, the entire closeprice column is transmitted as one object [ex. c('10', '20', '30', '40',...) or 1, 'a', etc.]

In addition, the return value from the function must have the same number of elements as the elements originally transmitted.

The `moving_avg()` function requires two arguments. The first argument accepts a column as a vector. The second factor is the number of rows to be treated as variables. The logic is very simple. First, generates an object `res <- c()` for return. Then, executes `for...loop` statement for number of element. In the case of the 'six-day moving average', if the variable  $i$  is less than or equal to 5, only an average from 1 to the current  $i$  value is obtained. And if the variable  $i$  exceeds 5, an average of the current  $i$  value and the previous five values are obtained.

$x$  = vector (column with values of data frame)  $n$  = number variable (2-day, 3-day, 4-day, ...,  $n$ -day)  $i$  = index of  $x \rightarrow 1$  to  $\text{length}(x)$   $res$  = result variable to return `res <- c(res, value) -> res = (1), res <- c(res, 2)` then `res = (1, 2)`

```
moving_avg <- function(x, n) { res <- c() for(i in 1:length(x)){ res <- c(res, ifelse(i < n, mean(x[1:i]),
mean(x[(i-(n-1)):i]))) } return(res) }
```

[example]  $x = (1, 2, 3, 4, 5, 6, 7, 8, 9, 10)$   $n = 6$   $i = 1 \rightarrow res = (1)$   $i = 2 \rightarrow res = (1, 1.5)$   $i = 3 \rightarrow res = (1, 1.5, 2)$   $i = 4 \rightarrow res = (1, 1.5, 2, 2.5)$   $i = 5 \rightarrow res = (1, 1.5, 2, 2.5, 3)$   $i = 6 \rightarrow res = (1, 1.5, 2, 2.5, 3, 3.5)$   $i = 7 \rightarrow res = (1, 1.5, 2, 2.5, 3, 3.5, 4.5)$   $i = 8 \rightarrow res = (1, 1.5, 2, 2.5, 3, 3.5, 4.5, 5.5)$   $i = 9 \rightarrow res = (1, 1.5, 2, 2.5, 3, 3.5, 4.5, 5.5, 6.5)$   $i = 10 \rightarrow res = (1, 1.5, 2, 2.5, 3, 3.5, 4.5, 5.5, 6.5, 7.5)$