

# timeSeries

Ram-G02494015

2022-11-15

```
library(forecast)
```

```
## Registered S3 method overwritten by 'quantmod':  
##   method      from  
##   as.zoo.data.frame zoo
```

```
library(caret)
```

```
## Loading required package: ggplot2
```

```
## Loading required package: lattice
```

```
library(ggplot2)  
library(pls)
```

```
##  
## Attaching package: 'pls'
```

```
## The following object is masked from 'package:caret':  
##  
##   R2
```

```
## The following object is masked from 'package:stats':  
##  
##   loadings
```

```
library(dplyr)
```

```
##  
## 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
```

```
#loading data
electricity_final<-read.csv(file = "electricity_final.csv")
head(electricity_final)
```

```
##      X      DATE CONSUMPTION
## 1 1 1973-01      144505.2
## 2 2 1973-02      139546.1
## 3 3 1973-03      137102.3
## 4 4 1973-04      131365.9
## 5 5 1973-05      131360.9
## 6 6 1973-06      140293.0
```

```
mon<-0
date_test<-c()
for(year in 1973:2020){
  ifelse(mon<12,mon<-mon+1, mon<-1)
  ifelse(mon<=9,a<-paste(0,mon,sep=''), a<-mon)
  ifelse(mon<9,b<-paste(0,mon+1,sep=''), b<-ifelse(mon<12,mon+1,"01"))
  date_test<-append(date_test,paste(year,a,sep='-'))
  date_test<-append(date_test,paste(year,b,sep='-'))
}
print(date_test)
```

```
## [1] "1973-01" "1973-02" "1974-02" "1974-03" "1975-03" "1975-04" "1976-04"
## [8] "1976-05" "1977-05" "1977-06" "1978-06" "1978-07" "1979-07" "1979-08"
## [15] "1980-08" "1980-09" "1981-09" "1981-10" "1982-10" "1982-11" "1983-11"
## [22] "1983-12" "1984-12" "1984-01" "1985-01" "1985-02" "1986-02" "1986-03"
## [29] "1987-03" "1987-04" "1988-04" "1988-05" "1989-05" "1989-06" "1990-06"
## [36] "1990-07" "1991-07" "1991-08" "1992-08" "1992-09" "1993-09" "1993-10"
## [43] "1994-10" "1994-11" "1995-11" "1995-12" "1996-12" "1996-01" "1997-01"
## [50] "1997-02" "1998-02" "1998-03" "1999-03" "1999-04" "2000-04" "2000-05"
## [57] "2001-05" "2001-06" "2002-06" "2002-07" "2003-07" "2003-08" "2004-08"
## [64] "2004-09" "2005-09" "2005-10" "2006-10" "2006-11" "2007-11" "2007-12"
## [71] "2008-12" "2008-01" "2009-01" "2009-02" "2010-02" "2010-03" "2011-03"
## [78] "2011-04" "2012-04" "2012-05" "2013-05" "2013-06" "2014-06" "2014-07"
## [85] "2015-07" "2015-08" "2016-08" "2016-09" "2017-09" "2017-10" "2018-10"
## [92] "2018-11" "2019-11" "2019-12" "2020-12" "2020-01"
```

```
match(date_test,electricity_final$DATE)
```

```
## [1] 1 2 14 15 27 28 40 41 53 54 66 67 79 80 92 93 105 106 118
## [20] 119 131 132 144 133 145 146 158 159 171 172 184 185 197 198 210 211 223 224
## [39] 236 237 249 250 262 263 275 276 288 277 289 290 302 303 315 316 328 329 341
## [58] 342 354 355 367 368 380 381 393 394 406 407 419 420 432 421 433 434 446 447
## [77] 459 460 472 473 485 486 498 499 511 512 524 525 537 538 550 551 563 564 576
## [96] 565
```

```
testSet<-electricity_final[match(date_test,electricity_final$DATE),]
testSet
```

##	X	DATE	CONSUMPTION
## 1	1	1973-01	144505.2
## 2	2	1973-02	139546.1
## 14	14	1974-02	136737.1
## 15	15	1974-03	135951.8
## 27	27	1975-03	140749.4
## 28	28	1975-04	135833.3
## 40	40	1976-04	142310.4
## 41	41	1976-05	141804.0
## 53	53	1977-05	148602.0
## 54	54	1977-06	159294.1
## 66	66	1978-06	165519.0
## 67	67	1978-07	179114.0
## 79	79	1979-07	178339.0
## 80	80	1979-08	187309.0
## 92	92	1980-08	196464.0
## 93	93	1980-09	190139.0
## 105	105	1981-09	186250.0
## 106	106	1981-10	171349.7
## 118	118	1982-10	163416.3
## 119	119	1982-11	160479.6
## 131	131	1983-11	170473.7
## 132	132	1983-12	185428.4
## 144	144	1984-12	187537.2
## 133	133	1984-01	207251.5
## 145	145	1985-01	202596.8
## 146	146	1985-02	202266.3
## 158	158	1986-02	195153.7
## 159	159	1986-03	188990.1
## 171	171	1987-03	193654.8
## 172	172	1987-04	184761.2
## 184	184	1988-04	192616.2
## 185	185	1988-05	191480.3
## 197	197	1989-05	201923.1
## 198	198	1989-06	221786.3
## 210	210	1990-06	226986.1
## 211	211	1990-07	251533.2
## 223	223	1991-07	256933.2
## 224	224	1991-08	258199.2
## 236	236	1992-08	252990.3
## 237	237	1992-09	239990.4
## 249	249	1993-09	252687.5
## 250	250	1993-10	228327.2
## 262	262	1994-10	233755.2
## 263	263	1994-11	226527.6
## 275	275	1995-11	235478.6
## 276	276	1995-12	252882.0
## 288	288	1996-12	258019.1
## 277	277	1996-01	272181.8
## 289	289	1997-01	275266.1
## 290	290	1997-02	250778.3
## 302	302	1998-02	249259.9
## 303	303	1998-03	253675.5
## 315	315	1999-03	260773.3

```
## 316 316 1999-04 246787.8
## 328 328 2000-04 249174.8
## 329 329 2000-05 269262.7
## 341 341 2001-05 264442.4
## 342 342 2001-06 289979.4
## 354 354 2002-06 296469.8
## 355 355 2002-07 337284.7
## 367 367 2003-07 334208.7
## 368 368 2003-08 341819.3
## 380 380 2004-08 330926.5
## 381 381 2004-09 308565.8
## 393 393 2005-09 330923.4
## 394 394 2005-10 297626.3
## 406 406 2006-10 291186.1
## 407 407 2006-11 277182.0
## 419 419 2007-11 286299.3
## 420 420 2007-12 307704.3
## 432 432 2008-12 308916.1
## 421 421 2008-01 326214.6
## 433 433 2009-01 321624.0
## 434 434 2009-02 286251.5
## 446 446 2010-02 298459.7
## 447 447 2010-03 292511.4
## 459 459 2011-03 292051.9
## 460 460 2011-04 275203.9
## 472 472 2012-04 270759.6
## 473 473 2012-05 296968.2
## 485 485 2013-05 289398.4
## 486 486 2013-06 320200.7
## 498 498 2014-06 322792.0
## 499 499 2014-07 351524.0
## 511 511 2015-07 362938.1
## 512 512 2015-08 362031.8
## 524 524 2016-08 381192.3
## 525 525 2016-09 336752.1
## 537 537 2017-09 321725.8
## 538 538 2017-10 299539.5
## 550 550 2018-10 309113.6
## 551 551 2018-11 290507.1
## 563 563 2019-11 285532.0
## 564 564 2019-12 309822.7
## 576 576 2020-12 315330.3
## 565 565 2020-01 315532.8
```

```
trainSet<- electricity_final %>% slice(-c(match(date_test,electricity_final$DATE)))
trainSet
```

```
##      X    DATE CONSUMPTION
## 1    3 1973-03   137102.3
## 2    4 1973-04   131365.9
## 3    5 1973-05   131360.9
## 4    6 1973-06   140293.0
## 5    7 1973-07   152562.2
## 6    8 1973-08   157480.8
```

## 7	9 1973-09	157309.6
## 8	10 1973-10	146042.0
## 9	11 1973-11	138141.7
## 10	12 1973-12	137199.0
## 11	13 1974-01	143986.1
## 12	16 1974-04	133007.1
## 13	17 1974-05	133077.2
## 14	18 1974-06	141930.9
## 15	19 1974-07	151511.2
## 16	20 1974-08	158112.5
## 17	21 1974-09	153619.1
## 18	22 1974-10	141355.3
## 19	23 1974-11	135783.8
## 20	24 1974-12	140851.7
## 21	25 1975-01	149394.3
## 22	26 1975-02	142973.2
## 23	29 1975-05	133567.9
## 24	30 1975-06	142995.6
## 25	31 1975-07	154204.0
## 26	32 1975-08	160901.8
## 27	33 1975-09	157741.3
## 28	34 1975-10	141817.7
## 29	35 1975-11	139259.6
## 30	36 1975-12	147652.7
## 31	37 1976-01	160539.0
## 32	38 1976-02	153548.6
## 33	39 1976-03	147464.8
## 34	42 1976-06	149038.7
## 35	43 1976-07	163006.5
## 36	44 1976-08	168630.8
## 37	45 1976-09	164411.9
## 38	46 1976-10	150984.5
## 39	47 1976-11	150740.8
## 40	48 1976-12	162766.1
## 41	49 1977-01	172350.9
## 42	50 1977-02	165298.2
## 43	51 1977-03	156204.4
## 44	52 1977-04	147926.4
## 45	55 1977-07	174997.8
## 46	56 1977-08	178590.1
## 47	57 1977-09	172261.6
## 48	58 1977-10	159348.3
## 49	59 1977-11	151312.1
## 50	60 1977-12	162175.4
## 51	61 1978-01	176649.0
## 52	62 1978-02	169927.0
## 53	63 1978-03	163406.0
## 54	64 1978-04	150385.0
## 55	65 1978-05	151504.0
## 56	68 1978-08	184223.0
## 57	69 1978-09	182638.0
## 58	70 1978-10	166722.0
## 59	71 1978-11	159126.0
## 60	72 1978-12	168709.0

## 61	73	1979-01	185387.0
## 62	74	1979-02	181515.0
## 63	75	1979-03	173249.0
## 64	76	1979-04	161557.0
## 65	77	1979-05	159551.0
## 66	78	1979-06	166860.0
## 67	81	1979-09	179640.0
## 68	82	1979-10	165948.0
## 69	83	1979-11	162271.0
## 70	84	1979-12	169473.0
## 71	85	1980-01	179585.0
## 72	86	1980-02	178721.0
## 73	87	1980-03	174373.0
## 74	88	1980-04	161701.0
## 75	89	1980-05	154851.0
## 76	90	1980-06	164872.0
## 77	91	1980-07	185882.0
## 78	94	1980-10	170080.0
## 79	95	1980-11	162174.0
## 80	96	1980-12	175607.0
## 81	97	1981-01	191949.1
## 82	98	1981-02	182207.2
## 83	99	1981-03	172826.4
## 84	100	1981-04	163524.8
## 85	101	1981-05	163172.8
## 86	102	1981-06	178827.4
## 87	103	1981-07	197814.4
## 88	104	1981-08	198459.3
## 89	107	1981-11	165016.3
## 90	108	1981-12	175705.4
## 91	109	1982-01	192079.2
## 92	110	1982-02	182805.2
## 93	111	1982-03	173959.1
## 94	112	1982-04	164511.7
## 95	113	1982-05	158569.4
## 96	114	1982-06	168739.1
## 97	115	1982-07	183567.0
## 98	116	1982-08	189740.4
## 99	117	1982-09	178295.9
## 100	120	1982-12	170278.5
## 101	121	1983-01	179175.8
## 102	122	1983-02	173464.9
## 103	123	1983-03	167583.5
## 104	124	1983-04	163807.4
## 105	125	1983-05	158919.0
## 106	126	1983-06	171604.3
## 107	127	1983-07	194153.3
## 108	128	1983-08	208115.0
## 109	129	1983-09	201922.1
## 110	130	1983-10	176307.1
## 111	134	1984-02	190869.5
## 112	135	1984-03	186072.4
## 113	136	1984-04	175350.1
## 114	137	1984-05	175542.4

## 115	138	1984-06	189758.4
## 116	139	1984-07	204473.7
## 117	140	1984-08	209045.7
## 118	141	1984-09	199021.4
## 119	142	1984-10	182285.3
## 120	143	1984-11	178588.9
## 121	147	1985-03	186112.9
## 122	148	1985-04	178530.0
## 123	149	1985-05	178781.5
## 124	150	1985-06	190305.0
## 125	151	1985-07	205200.8
## 126	152	1985-08	210659.9
## 127	153	1985-09	206261.5
## 128	154	1985-10	184730.4
## 129	155	1985-11	180229.4
## 130	156	1985-12	198299.5
## 131	157	1986-01	210263.5
## 132	160	1986-04	178470.1
## 133	161	1986-05	179570.2
## 134	162	1986-06	197388.7
## 135	163	1986-07	219272.4
## 136	164	1986-08	218394.1
## 137	165	1986-09	204297.3
## 138	166	1986-10	194192.8
## 139	167	1986-11	181791.0
## 140	168	1986-12	200969.2
## 141	169	1987-01	209720.8
## 142	170	1987-02	198217.9
## 143	173	1987-05	189107.2
## 144	174	1987-06	207917.4
## 145	175	1987-07	229302.5
## 146	176	1987-08	235513.1
## 147	177	1987-09	216522.6
## 148	178	1987-10	197233.5
## 149	179	1987-11	190326.0
## 150	180	1987-12	204995.1
## 151	181	1988-01	225773.6
## 152	182	1988-02	215080.7
## 153	183	1988-03	205160.4
## 154	186	1988-06	212998.2
## 155	187	1988-07	237528.9
## 156	188	1988-08	250489.2
## 157	189	1988-09	226305.3
## 158	190	1988-10	205505.0
## 159	191	1988-11	199125.7
## 160	192	1988-12	215998.9
## 161	193	1989-01	225616.6
## 162	194	1989-02	214979.4
## 163	195	1989-03	216617.8
## 164	196	1989-04	201925.1
## 165	199	1989-07	240292.5
## 166	200	1989-08	243644.2
## 167	201	1989-09	231944.3
## 168	202	1989-10	211493.5

##	169	203	1989-11	205737.6
##	170	204	1989-12	230849.0
##	171	205	1990-01	240881.3
##	172	206	1990-02	213404.0
##	173	207	1990-03	214120.1
##	174	208	1990-04	205165.2
##	175	209	1990-05	208222.2
##	176	212	1990-08	252065.4
##	177	213	1990-09	245079.5
##	178	214	1990-10	222300.6
##	179	215	1990-11	209915.5
##	180	216	1990-12	222881.5
##	181	217	1991-01	241253.1
##	182	218	1991-02	219193.7
##	183	219	1991-03	214226.4
##	184	220	1991-04	206371.3
##	185	221	1991-05	217318.0
##	186	222	1991-06	237962.6
##	187	225	1991-09	244419.4
##	188	226	1991-10	221557.1
##	189	227	1991-11	216712.4
##	190	228	1991-12	227856.7
##	191	229	1992-01	238763.8
##	192	230	1992-02	226233.0
##	193	231	1992-03	220009.1
##	194	232	1992-04	211961.9
##	195	233	1992-05	213685.3
##	196	234	1992-06	227278.8
##	197	235	1992-07	253088.4
##	198	238	1992-10	224791.9
##	199	239	1992-11	218506.2
##	200	240	1992-12	236066.5
##	201	241	1993-01	243247.3
##	202	242	1993-02	228478.5
##	203	243	1993-03	232674.7
##	204	244	1993-04	215829.2
##	205	245	1993-05	214565.0
##	206	246	1993-06	237349.0
##	207	247	1993-07	270211.0
##	208	248	1993-08	273829.8
##	209	251	1993-11	222941.0
##	210	252	1993-12	241322.2
##	211	253	1994-01	259857.6
##	212	254	1994-02	238851.8
##	213	255	1994-03	231782.0
##	214	256	1994-04	220068.4
##	215	257	1994-05	222049.3
##	216	258	1994-06	252721.1
##	217	259	1994-07	278007.4
##	218	260	1994-08	272838.9
##	219	261	1994-09	254884.2
##	220	264	1994-12	243219.4
##	221	265	1995-01	255280.5
##	222	266	1995-02	239138.6



##	223	267	1995-03	236465.2
##	224	268	1995-04	221858.7
##	225	269	1995-05	229588.6
##	226	270	1995-06	255009.9
##	227	271	1995-07	281546.3
##	228	272	1995-08	298999.8
##	229	273	1995-09	265986.0
##	230	274	1995-10	241052.6
##	231	278	1996-02	256104.0
##	232	279	1996-03	249033.2
##	233	280	1996-04	230337.4
##	234	281	1996-05	239667.2
##	235	282	1996-06	265900.9
##	236	283	1996-07	285970.6
##	237	284	1996-08	289872.9
##	238	285	1996-09	268016.2
##	239	286	1996-10	245231.8
##	240	287	1996-11	240792.0
##	241	291	1997-03	243552.5
##	242	292	1997-04	234755.5
##	243	293	1997-05	236772.9
##	244	294	1997-06	261422.6
##	245	295	1997-07	296258.1
##	246	296	1997-08	294364.8
##	247	297	1997-09	278716.6
##	248	298	1997-10	262863.0
##	249	299	1997-11	246559.9
##	250	300	1997-12	264300.3
##	251	301	1998-01	271099.4
##	252	304	1998-04	239545.2
##	253	305	1998-05	253680.5
##	254	306	1998-06	283992.7
##	255	307	1998-07	313522.2
##	256	308	1998-08	318654.7
##	257	309	1998-09	297097.2
##	258	310	1998-10	266302.9
##	259	311	1998-11	250014.5
##	260	312	1998-12	267385.9
##	261	313	1999-01	283533.4
##	262	314	1999-02	251149.8
##	263	317	1999-05	254356.4
##	264	318	1999-06	284733.5
##	265	319	1999-07	324314.7
##	266	320	1999-08	322980.3
##	267	321	1999-09	294798.2
##	268	322	1999-10	265399.2
##	269	323	1999-11	252528.9
##	270	324	1999-12	270731.6
##	271	325	2000-01	287763.5
##	272	326	2000-02	272095.0
##	273	327	2000-03	262417.8
##	274	330	2000-06	299764.6
##	275	331	2000-07	317565.8
##	276	332	2000-08	330732.5

##	277	333	2000-09	303693.3
##	278	334	2000-10	272835.2
##	279	335	2000-11	264121.0
##	280	336	2000-12	291987.9
##	281	337	2001-01	310846.4
##	282	338	2001-02	272323.8
##	283	339	2001-03	269315.1
##	284	340	2001-04	254326.3
##	285	343	2001-07	315850.1
##	286	344	2001-08	332255.8
##	287	345	2001-09	296041.7
##	288	346	2001-10	267596.3
##	289	347	2001-11	252942.7
##	290	348	2001-12	268538.0
##	291	349	2002-01	290967.5
##	292	350	2002-02	263728.3
##	293	351	2002-03	267459.8
##	294	352	2002-04	257946.4
##	295	353	2002-05	269323.3
##	296	356	2002-08	338114.5
##	297	357	2002-09	310497.9
##	298	358	2002-10	284178.0
##	299	359	2002-11	263033.6
##	300	360	2002-12	286462.4
##	301	361	2003-01	304262.6
##	302	362	2003-02	282239.6
##	303	363	2003-03	274473.4
##	304	364	2003-04	256710.0
##	305	365	2003-05	268788.1
##	306	366	2003-06	290449.9
##	307	369	2003-09	306589.9
##	308	370	2003-10	277380.2
##	309	371	2003-11	262976.7
##	310	372	2003-12	293836.1
##	311	373	2004-01	307856.5
##	312	374	2004-02	286433.4
##	313	375	2004-03	278181.6
##	314	376	2004-04	262851.0
##	315	377	2004-05	279035.8
##	316	378	2004-06	307772.4
##	317	379	2004-07	333907.0
##	318	382	2004-10	281736.7
##	319	383	2004-11	270162.9
##	320	384	2004-12	300049.9
##	321	385	2005-01	309078.8
##	322	386	2005-02	279513.8
##	323	387	2005-03	286791.1
##	324	388	2005-04	264167.9
##	325	389	2005-05	273500.3
##	326	390	2005-06	319380.9
##	327	391	2005-07	355514.1
##	328	392	2005-08	362543.7
##	329	395	2005-11	274585.5
##	330	396	2005-12	307342.7

##	331	397	2006-01	304866.0
##	332	398	2006-02	281046.4
##	333	399	2006-03	289970.3
##	334	400	2006-04	268208.3
##	335	401	2006-05	287198.1
##	336	402	2006-06	321839.9
##	337	403	2006-07	362386.8
##	338	404	2006-08	368633.8
##	339	405	2006-09	317282.1
##	340	408	2006-12	300119.2
##	341	409	2007-01	315103.8
##	342	410	2007-02	301331.3
##	343	411	2007-03	291660.3
##	344	412	2007-04	275340.5
##	345	413	2007-05	292800.3
##	346	414	2007-06	323006.6
##	347	415	2007-07	352642.3
##	348	416	2007-08	373364.8
##	349	417	2007-09	337524.6
##	350	418	2007-10	307782.6
##	351	422	2008-02	305094.9
##	352	423	2008-03	294625.3
##	353	424	2008-04	277963.4
##	354	425	2008-05	288276.1
##	355	426	2008-06	328592.5
##	356	427	2008-07	360426.6
##	357	428	2008-08	351856.4
##	358	429	2008-09	321906.2
##	359	430	2008-10	291762.1
##	360	431	2008-11	278330.4
##	361	435	2009-03	283807.8
##	362	436	2009-04	265463.6
##	363	437	2009-05	275276.0
##	364	438	2009-06	305520.5
##	365	439	2009-07	337878.1
##	366	440	2009-08	344845.2
##	367	441	2009-09	310563.3
##	368	442	2009-10	287116.3
##	369	443	2009-11	268157.9
##	370	444	2009-12	310291.0
##	371	445	2010-01	331878.8
##	372	448	2010-04	267052.1
##	373	449	2010-05	283729.3
##	374	450	2010-06	330893.2
##	375	451	2010-07	369017.7
##	376	452	2010-08	371769.3
##	377	453	2010-09	327742.3
##	378	454	2010-10	287839.8
##	379	455	2010-11	274900.1
##	380	456	2010-12	319047.7
##	381	457	2011-01	334115.7
##	382	458	2011-02	296903.5
##	383	461	2011-05	287992.7
##	384	462	2011-06	328707.3

##	385	463	2011-07	370691.9
##	386	464	2011-08	372719.8
##	387	465	2011-09	326247.2
##	388	466	2011-10	288132.9
##	389	467	2011-11	275235.2
##	390	468	2011-12	301844.2
##	391	469	2012-01	310975.4
##	392	470	2012-02	286982.9
##	393	471	2012-03	283731.2
##	394	474	2012-06	325159.9
##	395	475	2012-07	370962.7
##	396	476	2012-08	364784.7
##	397	477	2012-09	318089.7
##	398	478	2012-10	290735.5
##	399	479	2012-11	278211.9
##	400	480	2012-12	297288.1
##	401	481	2013-01	320682.9
##	402	482	2013-02	291480.4
##	403	483	2013-03	297226.0
##	404	484	2013-04	277781.9
##	405	487	2013-07	358700.9
##	406	488	2013-08	353579.6
##	407	489	2013-09	323477.9
##	408	490	2013-10	294370.3
##	409	491	2013-11	281494.3
##	410	492	2013-12	316474.5
##	411	493	2014-01	341238.3
##	412	494	2014-02	308941.1
##	413	495	2014-03	302388.2
##	414	496	2014-04	275893.7
##	415	497	2014-05	291420.9
##	416	500	2014-08	351883.0
##	417	501	2014-09	326907.1
##	418	502	2014-10	296679.8
##	419	503	2014-11	285412.6
##	420	504	2014-12	309619.7
##	421	505	2015-01	329666.3
##	422	506	2015-02	306768.4
##	423	507	2015-03	305351.8
##	424	508	2015-04	275475.1
##	425	509	2015-05	288090.7
##	426	510	2015-06	326396.9
##	427	513	2015-09	332957.9
##	428	514	2015-10	296055.3
##	429	515	2015-11	275916.5
##	430	516	2015-12	297343.6
##	431	517	2016-01	320890.2
##	432	518	2016-02	296805.8
##	433	519	2016-03	285812.4
##	434	520	2016-04	269531.2
##	435	521	2016-05	284707.6
##	436	522	2016-06	329877.9
##	437	523	2016-07	372172.3
##	438	526	2016-10	296680.7

##	439	527	2016-11	277317.0
##	440	528	2016-12	310722.2
##	441	529	2017-01	318177.2
##	442	530	2017-02	275777.1
##	443	531	2017-03	291443.6
##	444	532	2017-04	272801.2
##	445	533	2017-05	291870.5
##	446	534	2017-06	328582.6
##	447	535	2017-07	367613.0
##	448	536	2017-08	360262.6
##	449	539	2017-11	283347.0
##	450	540	2017-12	312215.8
##	451	541	2018-01	344477.7
##	452	542	2018-02	292732.3
##	453	543	2018-03	296999.3
##	454	544	2018-04	278468.0
##	455	545	2018-05	303248.0
##	456	546	2018-06	338083.0
##	457	547	2018-07	375023.4
##	458	548	2018-08	381130.6
##	459	549	2018-09	337262.5
##	460	552	2018-12	312139.7
##	461	553	2019-01	328609.3
##	462	554	2019-02	295797.7
##	463	555	2019-03	301852.7
##	464	556	2019-04	273899.8
##	465	557	2019-05	296801.7
##	466	558	2019-06	321461.6
##	467	559	2019-07	376094.8
##	468	560	2019-08	372574.1
##	469	561	2019-09	340462.8
##	470	562	2019-10	308241.2
##	471	566	2020-02	294659.4
##	472	567	2020-03	289893.8
##	473	568	2020-04	262400.6
##	474	569	2020-05	274707.1
##	475	570	2020-06	320055.7
##	476	571	2020-07	379530.0
##	477	572	2020-08	368884.5
##	478	573	2020-09	322554.5
##	479	574	2020-10	296876.6
##	480	575	2020-11	277249.2
##	481	577	2021-01	320935.6
##	482	578	2021-02	298688.3
##	483	579	2021-03	293378.1
##	484	580	2021-04	271622.6
##	485	581	2021-05	289041.0
##	486	582	2021-06	337531.7
##	487	583	2021-07	372678.5
##	488	584	2021-08	380398.8
##	489	585	2021-09	336013.3
##	490	586	2021-10	301310.0
##	491	587	2021-11	286360.0
##	492	588	2021-12	306581.2

```
## 493 589 2022-01    336691.8
## 494 590 2022-02    304272.3
## 495 591 2022-03    303490.0
## 496 592 2022-04    283846.5
## 497 593 2022-05    307105.7
```

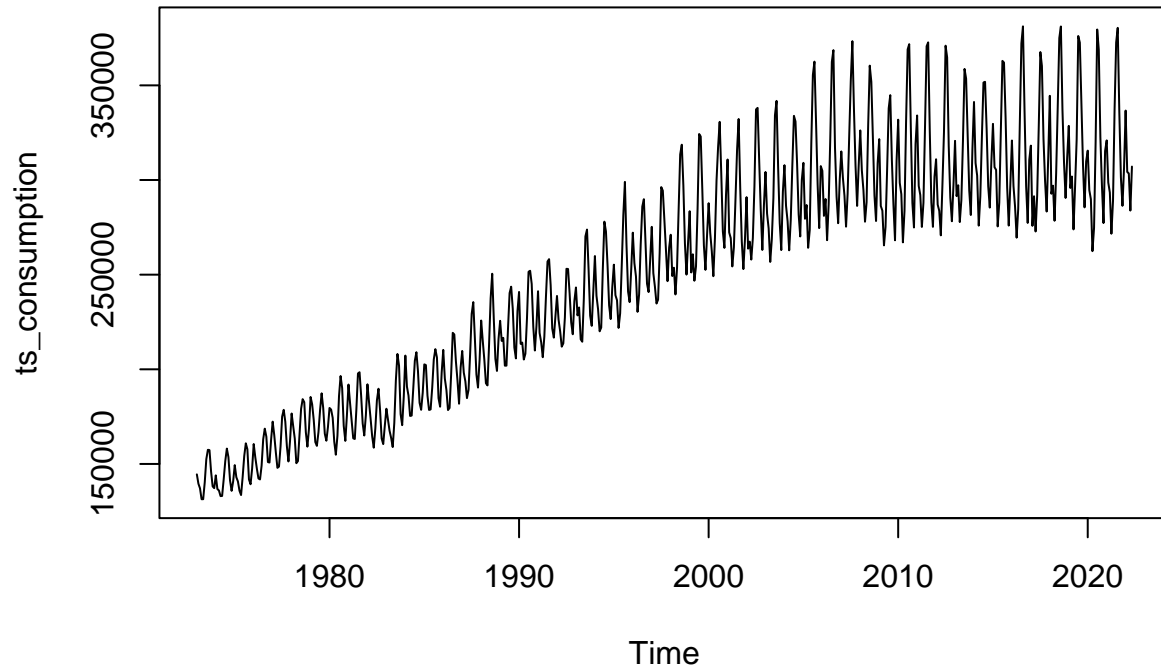
```
ts_consumption <- ts(electricity_final$CONSUMPTION , frequency = 12, start = c(1973))
ts_consumption
```

##		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
##	1973	144505.2	139546.1	137102.3	131365.9	131360.9	140293.0	152562.2	157480.8
##	1974	143986.1	136737.1	135951.8	133007.1	133077.2	141930.9	151511.2	158112.5
##	1975	149394.3	142973.2	140749.4	135833.3	133567.9	142995.6	154204.0	160901.8
##	1976	160539.0	153548.6	147464.8	142310.4	141804.0	149038.7	163006.5	168630.8
##	1977	172350.9	165298.2	156204.4	147926.4	148602.0	159294.1	174997.8	178590.1
##	1978	176649.0	169927.0	163406.0	150385.0	151504.0	165519.0	179114.0	184223.0
##	1979	185387.0	181515.0	173249.0	161557.0	159551.0	166860.0	178339.0	187309.0
##	1980	179585.0	178721.0	174373.0	161701.0	154851.0	164872.0	185882.0	196464.0
##	1981	191949.1	182207.2	172826.4	163524.8	163172.8	178827.4	197814.4	198459.3
##	1982	192079.2	182805.2	173959.1	164511.7	158569.4	168739.1	183567.0	189740.4
##	1983	179175.8	173464.9	167583.5	163807.4	158919.0	171604.3	194153.3	208115.0
##	1984	207251.5	190869.5	186072.4	175350.1	175542.4	189758.4	204473.7	209045.7
##	1985	202596.8	202266.3	186112.9	178530.0	178781.5	190305.0	205200.8	210659.9
##	1986	210263.5	195153.7	188990.1	178470.1	179570.2	197388.7	219272.4	218394.1
##	1987	209720.8	198217.9	193654.8	184761.2	189107.2	207917.4	229302.5	235513.1
##	1988	225773.6	215080.7	205160.4	192616.2	191480.3	212998.2	237528.9	250489.2
##	1989	225616.6	214979.4	216617.8	201925.1	201923.1	221786.3	240292.5	243644.2
##	1990	240881.3	213404.0	214120.1	205165.2	208222.2	226986.1	251533.2	252065.4
##	1991	241253.1	219193.7	214226.4	206371.3	217318.0	237962.6	256933.2	258199.2
##	1992	238763.8	226233.0	220009.1	211961.9	213685.3	227278.8	253088.4	252990.3
##	1993	243247.3	228478.5	232674.7	215829.2	214565.0	237349.0	270211.0	273829.8
##	1994	259857.6	238851.8	231782.0	220068.4	222049.3	252721.1	278007.4	272838.9
##	1995	255280.5	239138.6	236465.2	221858.7	229588.6	255009.9	281546.3	298999.8
##	1996	272181.8	256104.0	249033.2	230337.4	239667.2	265900.9	285970.6	289872.9
##	1997	275266.1	250778.3	243552.5	234755.5	236772.9	261422.6	296258.1	294364.8
##	1998	271099.4	249259.9	253675.5	239545.2	253680.5	283992.7	313522.2	318654.7
##	1999	283533.4	251149.8	260773.3	246787.8	254356.4	284733.5	324314.7	322980.3
##	2000	287763.5	272095.0	262417.8	249174.8	269262.7	299764.6	317565.8	330732.5
##	2001	310846.4	272323.8	269315.1	254326.3	264442.4	289979.4	315850.1	332255.8
##	2002	290967.5	263728.3	267459.8	257946.4	269323.3	296469.8	337284.7	338114.5
##	2003	304262.6	282239.6	274473.4	256710.0	268788.1	290449.9	334208.7	341819.3
##	2004	307856.5	286433.4	278181.6	262851.0	279035.8	307772.4	333907.0	330926.5
##	2005	309078.8	279513.8	286791.1	264167.9	273500.3	319380.9	355514.1	362543.7
##	2006	304866.0	281046.4	289970.3	268208.3	287198.1	321839.9	362386.8	368633.8
##	2007	315103.8	301331.3	291660.3	275340.5	292800.3	323006.6	352642.3	373364.8
##	2008	326214.6	305094.9	294625.3	277963.4	288276.1	328592.5	360426.6	351856.4
##	2009	321624.0	286251.5	283807.8	265463.6	275276.0	305520.5	337878.1	344845.2
##	2010	331878.8	298459.7	292511.4	267052.1	283729.3	330893.2	369017.7	371769.3
##	2011	334115.7	296903.5	292051.9	275203.9	287992.7	328707.3	370691.9	372719.8
##	2012	310975.4	286982.9	283731.2	270759.6	296968.2	325159.9	370962.7	364784.7
##	2013	320682.9	291480.4	297226.0	277781.9	289398.4	320200.7	358700.9	353579.6
##	2014	341238.3	308941.1	302388.2	275893.7	291420.9	322792.0	351524.0	351883.0
##	2015	329666.3	306768.4	305351.8	275475.1	288090.7	326396.9	362938.1	362031.8
##	2016	320890.2	296805.8	285812.4	269531.2	284707.6	329877.9	372172.3	381192.3

##	2017	318177.2	275777.1	291443.6	272801.2	291870.5	328582.6	367613.0	360262.6
##	2018	344477.7	292732.3	296999.3	278468.0	303248.0	338083.0	375023.4	381130.6
##	2019	328609.3	295797.7	301852.7	273899.8	296801.7	321461.6	376094.8	372574.1
##	2020	315532.8	294659.4	289893.8	262400.6	274707.1	320055.7	379530.0	368884.5
##	2021	320935.6	298688.3	293378.1	271622.6	289041.0	337531.7	372678.5	380398.8
##	2022	336691.8	304272.3	303490.0	283846.5	307105.7			
##		Sep	Oct	Nov	Dec				
##	1973	157309.6	146042.0	138141.7	137199.0				
##	1974	153619.1	141355.3	135783.8	140851.7				
##	1975	157741.3	141817.7	139259.6	147652.7				
##	1976	164411.9	150984.5	150740.8	162766.1				
##	1977	172261.6	159348.3	151312.1	162175.4				
##	1978	182638.0	166722.0	159126.0	168709.0				
##	1979	179640.0	165948.0	162271.0	169473.0				
##	1980	190139.0	170080.0	162174.0	175607.0				
##	1981	186250.0	171349.7	165016.3	175705.4				
##	1982	178295.9	163416.3	160479.6	170278.5				
##	1983	201922.1	176307.1	170473.7	185428.4				
##	1984	199021.4	182285.3	178588.9	187537.2				
##	1985	206261.5	184730.4	180229.4	198299.5				
##	1986	204297.3	194192.8	181791.0	200969.2				
##	1987	216522.6	197233.5	190326.0	204995.1				
##	1988	226305.3	205505.0	199125.7	215998.9				
##	1989	231944.3	211493.5	205737.6	230849.0				
##	1990	245079.5	222300.6	209915.5	222881.5				
##	1991	244419.4	221557.1	216712.4	227856.7				
##	1992	239990.4	224791.9	218506.2	236066.5				
##	1993	252687.5	228327.2	222941.0	241322.2				
##	1994	254884.2	233755.2	226527.6	243219.4				
##	1995	265986.0	241052.6	235478.6	252882.0				
##	1996	268016.2	245231.8	240792.0	258019.1				
##	1997	278716.6	262863.0	246559.9	264300.3				
##	1998	297097.2	266302.9	250014.5	267385.9				
##	1999	294798.2	265399.2	252528.9	270731.6				
##	2000	303693.3	272835.2	264121.0	291987.9				
##	2001	296041.7	267596.3	252942.7	268538.0				
##	2002	310497.9	284178.0	263033.6	286462.4				
##	2003	306589.9	277380.2	262976.7	293836.1				
##	2004	308565.8	281736.7	270162.9	300049.9				
##	2005	330923.4	297626.3	274585.5	307342.7				
##	2006	317282.1	291186.1	277182.0	300119.2				
##	2007	337524.6	307782.6	286299.3	307704.3				
##	2008	321906.2	291762.1	278330.4	308916.1				
##	2009	310563.3	287116.3	268157.9	310291.0				
##	2010	327742.3	287839.8	274900.1	319047.7				
##	2011	326247.2	288132.9	275235.2	301844.2				
##	2012	318089.7	290735.5	278211.9	297288.1				
##	2013	323477.9	294370.3	281494.3	316474.5				
##	2014	326907.1	296679.8	285412.6	309619.7				
##	2015	332957.9	296055.3	275916.5	297343.6				
##	2016	336752.1	296680.7	277317.0	310722.2				
##	2017	321725.8	299539.5	283347.0	312215.8				
##	2018	337262.5	309113.6	290507.1	312139.7				
##	2019	340462.8	308241.2	285532.0	309822.7				

```
## 2020 322554.5 296876.6 277249.2 315330.3
## 2021 336013.3 301310.0 286360.0 306581.2
## 2022
```

```
plot(ts_consumption)
```



```
electricity_split<- createTimeSlices(ts_consumption, 10, horizon = 2, fixedWindow = FALSE, skip = 0)
str(electricity_split,max.level = 1)
```

```
## List of 2
## $ train:List of 582
## $ test :List of 582
```