Assignment_1

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1.Calculate p_k. Since the number of misprints in one page follows a $Poisson(\lambda = 2)$ distribution, so that we can come out with a table p_k contains the probability of one single page with at lesat 0 to 10 misprints.

```
p_k = c(ppois(q=0:10,lambda=2,lower.tail=FALSE))
p_k
```

```
##  [1] 8.646647e-01 5.939942e-01 3.233236e-01 1.428765e-01 5.265302e-02
##  [6] 1.656361e-02 4.533806e-03 1.096719e-03 2.374473e-04 4.649808e-05
## [11] 8.308224e-06
```

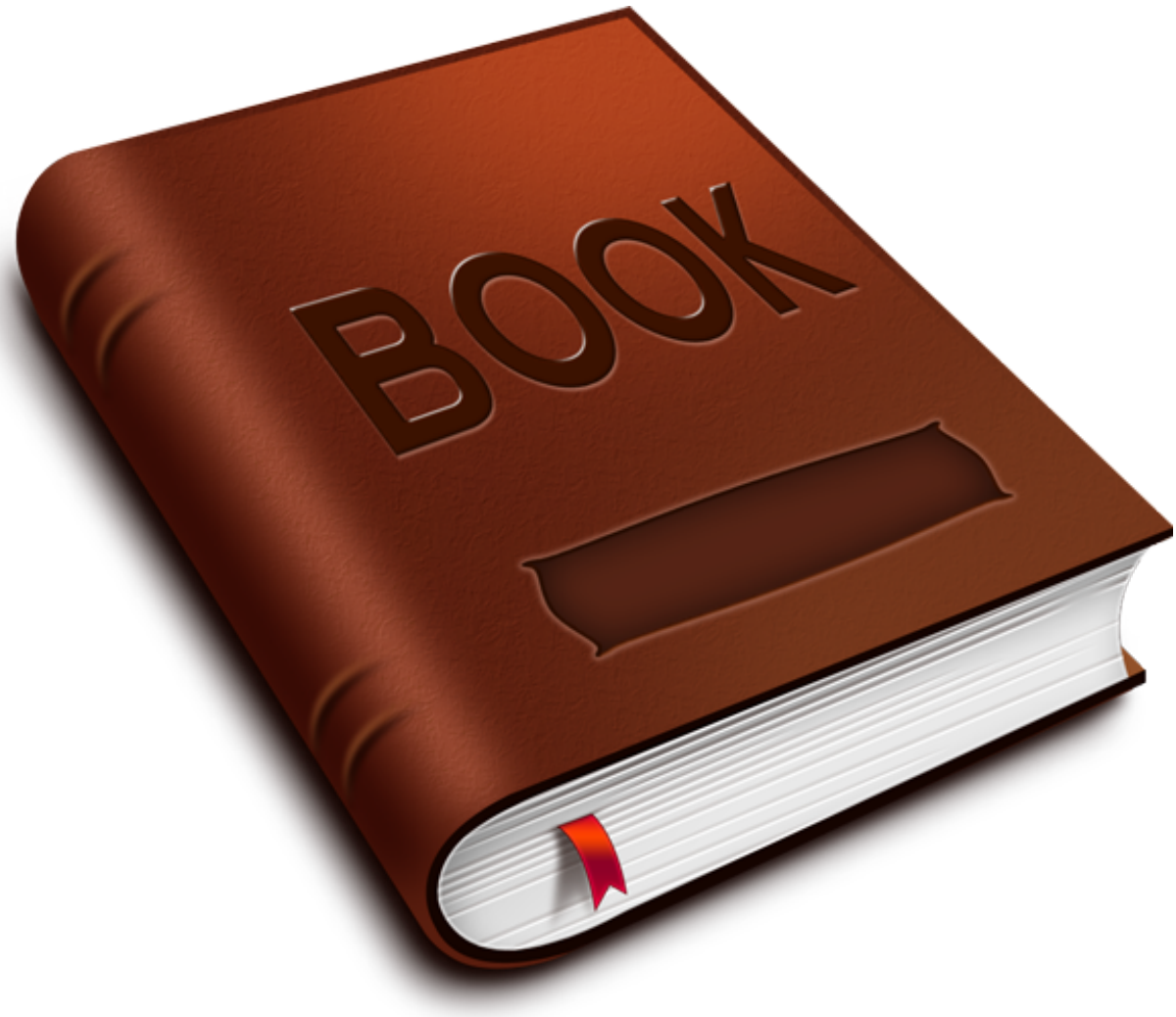
2.Build a table with 51 rows(number of pages) and 11 columns(number of misprints). Next, since no more than n pages with more than k misprints follows a Binomial distribution, we calculate each element in table with pbinom(n, 50, p_k).

```
table = as.data.frame(matrix(nrow=51,ncol=11,dimnames=list(c(0:50),c(0:10))))
for (i in 1:51) {
  for (j in 1:11) {
    table[i,j] = pbinom(q=i-1,size=50,prob=p_k[j])
  }
}
# table
my_table = kable(table)
kable_styling(my_table, bootstrap_options = "striped", full_width = FALSE, position = "left",font_size =
```

	0	1	2	3	4	5	6	7	8	9	10
0	0.0000000	0.0000000	0.0000000	0.0004489	0.0669043	0.4338242	0.7967569	0.9466119	0.9881964	0.9976777	0.9995847
1	0.0000000	0.0000000	0.0000001	0.0041905	0.2528294	0.7991602	0.9781965	0.9985773	0.9999315	0.9999974	0.9999999
2	0.0000000	0.0000000	0.0000010	0.0194711	0.5060029	0.9499136	0.9984423	0.9999751	0.9999997	1.0000000	1.0000000
3	0.0000000	0.0000000	0.0000081	0.0602258	0.7311428	0.9905388	0.9999176	0.9999997	1.0000000	1.0000000	1.0000000
4	0.0000000	0.0000000	0.0000477	0.1400498	0.8781723	0.9985786	0.9999966	1.0000000	1.0000000	1.0000000	1.0000000
5	0.0000000	0.0000000	0.0002221	0.2624659	0.9533530	0.9998243	0.9999999	1.0000000	1.0000000	1.0000000	1.0000000
6	0.0000000	0.0000000	0.0008469	0.4155103	0.9846918	0.9999817	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000
7	0.0000000	0.0000000	0.0027233	0.5758679	0.9956402	0.9999984	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000
8	0.0000000	0.0000000	0.0075426	0.7195443	0.9989109	0.9999999	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000
9	0.0000000	0.0000000	0.0182885	0.8313104	0.9997592	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000
10	0.0000000	0.0000000	0.0393399	0.9076959	0.9999525	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000
11	0.0000000	0.0000001	0.0759167	0.9539976	0.9999916	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000
12	0.0000000	0.0000004	0.1327164	0.9790816	0.9999987	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000
13	0.0000000	0.0000017	0.2120473	0.9913039	0.9999998	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000
14	0.0000000	0.0000069	0.3122252	0.9966884	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000
15	0.0000000	0.0000250	0.4271040	0.9988426	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000
16	0.0000000	0.0000829	0.5471767	0.9996281	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000
17	0.0000000	0.0002524	0.6619208	0.9998899	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000
18	0.0000000	0.0007071	0.7624352	0.9999700	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000
19	0.0000000	0.0018273	0.8433227	0.9999924	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000
20	0.0000000	0.0043677	0.9032285	0.9999982	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000
21	0.0000000	0.0096772	0.9441194	0.9999996	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000
22	0.0000000	0.0199167	0.9698743	0.9999999	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000
23	0.0000000	0.0381540	0.9848555	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000
24	0.0000000	0.0681706	0.9929084	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000
25	0.0000000	0.1138421	0.9969101	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000
26	0.0000000	0.1780904	0.9987486	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000
27	0.0000000	0.2616428	0.9995295	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000
28	0.0000001	0.3620531	0.9998359	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000
29	0.0000007	0.4734962	0.9999470	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000
30	0.0000033	0.5876265	0.9999842	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000
31	0.0000138	0.6953522	0.9999956	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000
32	0.0000537	0.7889300	0.9999989	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000
33	0.0001928	0.8636060	0.9999997	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000
34	0.0006371	0.9182322	0.9999999	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000
35	0.0019348	0.9547667	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000
36	0.0053895	0.9770378	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000
37	0.0137410	0.9893665	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000
38	0.0319953	0.9955371	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000
39	0.0678806	0.9983148	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000
40	0.1309308	0.9994324	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000
41	0.2291824	0.9998312	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000
42	0.3636970	0.9999562	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000
43	0.5235893	0.9999903	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000
44	0.6861104	0.9999982	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000
45	0.8245579	0.9999997	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000
46	0.9207045	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000
47	0.9729842	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000
48	0.9938603	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000
49	0.9993044	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000
50	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000

##3.Book Pic

```
download.file(url = "https://rta.org.af/eng/wp-content/uploads/2016/02/book.png",
          destfile = "book.png",
          mode = 'wb')
knitr::include_graphics(path = "book.png")
```


BOOK