1. StarWars.h

```
#include <stdio.h>
#include <stdlib.h>

void read_page_num(FILE* fp, int *page_number);
void count_page_num(int *num_count, int page_number);
void print_result(int *array);
```

2. main.c

```
#include "StarWars.h"

void main(int argc, char *argv[]) {
	FILE *fp;
	int num_count[10];
	int test_case_num, page_number;

	//If there's no input file, exit.
	if (argc != 2) {
	   printf("Error! Uasage: CountPageNum [case filename]₩n");
	   return;
	}

	//Open test case file and read the number of test cases.
	fp = fopen(argv[1], "r");
	if (fp == NULL) {
	   printf("Error! Cannot open file.₩n");
	   return;
	}
	fscanf(fp, "%d", &test_case_num);

	//Count the number that consists each page number.
	//Repeat the process test_case_num times.
	for (int i=0; i<test_case_num; i++) {
	   //reset the page count
	   for (int j=0; j<10; j++) {
```

```
                num_count[j] = 0;
            }
            read_page_num(fp, &page_number); //Get page number from the file.
            count_page_num(num_count, page_number); // Count the numbers that make up each page number.
            print_result(num_count); //Print the calculation result.
        }
        fclose(fp);
        return;
}
```

3. read.c

```
#include "StarWars.h"

void read_page_num(FILE* fp, int *page_number) {
        fscanf(fp, "%d", page_number);
        //Range check
        if (*page_number < 0 || *page_number > 1000000001) {
            printf("Error! Total page number is out of range.₩n");
            exit(0);
        }
}
```

4. calculate.c

```
#include "StarWars.h"

void count_page_num(int *num_count, int page_number) {
        int each_page, remainder;

        //For each page, count the number that consists the page number.
        for (int i=1; i <= page_number; i++) {
                each_page = i;
                while (each_page > 0) {
                        remainder = each_page % 10;
                        num_count[remainder]++;
                        each_page /= 10;
                }
            }
```

```
}
```

5. print_result.c

```
#include "StarWars.h"

//Print the counted numbers.
void print_result(int *array) {
	for (int i=0; i<10; i++) {
		printf("%d ", array[i]);
	}
	printf("₩n");
}
```

6. Makefile

```
cc=gcc
cflags = -O2 -w
target = StarWars.exe
objects = main.o read.o calculate.o print_result.o

$(target) : $(objects)
	$(cc) $(cflags) -o $(target) $(objects)

%.o : %.c
	$(cc) $(cflags) -c -o $@ $<

.PHONY : clean
clean :
	rm $(target) $(objects)
```