

LAB 05/14

1. Please design a function `char* hexToDec(char hex[])` translate heximal number into corresponding decimal number. Please let user input test data continuously until inputting CTRL+D.

Ex :

`hexToDec("1EF324")` would return 2028324

`hexToDec("1ef324")` would return 2028324

2. Please write a subroutine `void replaceWord(char *arti, char *wor, char *rep)`, which can replace the word “**wor**” of article “**arti**” by another word “**rep**”. Please use following code to verify your function.

```
int main()
{
    char arti[MAX_N] = "Get free image-photophoto hosting, easy photo sharing, and
    photo editing. Upload picturesphoto and photovideos, create with the online
    photo editor, or browse a topphotodown gallery or photo.";
    char word[6] = "photo";
    char repl1[4] = "PEN";
    char repl2[8] = "Digital";

    printf("Original:\n%s\n\n", arti);
    replaceWord(arti, word, repl1);
    printf("Replaced:\n%s\n\n", arti);

    printf("Original:\n%s\n\n", arti);
    replaceWord(arti, repl1, repl2);
    printf("Replaced:\n%s\n\n", arti);

    return 0;
}
```

The output is as follows.

```
Original:
Get free image-photophoto hosting, easy photo sharing, and photo editing. Upload picturesphoto and photovideos, create with the online photo editor, or browse a topphotodown gallery or photo.

Replaced:
Get free image-PENPEN hosting, easy PEN sharing, and PEN editing. Upload picturesPEN and PENvideos, create with the online PEN editor, or browse a topPENdown gallery or PEN

Original:
Get free image-PENPEN hosting, easy PEN sharing, and PEN editing. Upload picturesPEN and PENvideos, create with the online PEN editor, or browse a topPENdown gallery or PEN

Replaced:
Get free image-DigitalDigital hosting, easy Digital sharing, and Digital editing. Upload picturesDigital and Digitalvideos, create with the online Digital editor, or browse a topDigitaldown gallery or Digital
```

3. Count the words (Using Graphics mode on Windows)

Big data is nowadays a popular issue in the field of data science. One of its applications is finding the keywords frequently referred by people through the network. It is not surprising for us to see such a graph shown below.



Though we now cannot do this job for demo, we can imitate it as via an easier approach.

Given an article **arti** represented as a C-string, please find out **the number of occurrences of each words (without considering capital)** in **arti**. Output the top 5 words having the highest occurrence times using graphics mode. The higher occurrence times a word, the larger it is displayed. **(Ignore all punctuation marks as well as spaces in the article)**

(Ignore words with length ≤ 3)

You can use following code for help.

Hint : Using **strtok** to extract the words from article.

```
#include<stdio.h>
#include<string.h>
#include<graphics.h>
#include<conio.h>
using namespace std;

#define L 2000 //Assume number of words in the article not more than 2000

struct word{
    char c[30];
    int count;
};

void show(word *words){
    initwindow(1000,800);

    int y = 0;
    for(int i=0;i<8;i++){
        setcolor(i + 1);
        settextstyle(0, 0, 20-i);
        outtextxy(300,y,words[i].c);
        y += 100;
    }
    getch();
    closegraph();
}

int main(){
    char arti[] = "The leaders of North and South Korea have committed themselves
to the complete denuclearization of the Korean Peninsula and pledged to bring a
formal end to the Korean War, 65 years after hostilities ceased. In a remarkable
day-long summit that weighed heavy with symbolism, South Korean President
Moon Jae-in and his North Korean counterpart, Kim Jong Un embraced, planted
a tree and talked alone for more than 30 minutes. Then they signed the
Panmunjom Declaration for Peace, Prosperity and Unification on the Korean
Peninsula, which commits the two countries to denuclearization and talks to
```

bring a formal end to conflict. It was a startling conclusion to the first meeting between leaders of the two countries in 10 years. In separate speeches, Kim and Moon promised a new era. Addressing the world media live on television for the first time, Kim said the Koreas will be reunited as one country. Moon said: There will not be any more war on the Korean peninsula. But behind all the ceremony, at the Panmunjom peace village in the Demilitarized Zone (DMZ) that separates North and South Korea, there were few concrete details. The Panmunjom Declaration largely steered clear of specifics regarding Pyongyangs nuclear capabilities, and did not set out what North Korea would expect to get in exchange for denuclearization. The pledge to end the Korean war faces major hurdles -- any final peace deal must also involve China and the US, both of whom were participants in the original conflict that began in 1950 when the North Korean Peoples Army invaded the South. Although an armistice was signed in 1953, no formal peace treaty was ever concluded, and technically, the peninsula remains at war.";

...

show(words);

}

Result:

Korean
North
South
Peninsula
Peace
Korea
formal
that