//   Pada bagian ini, kita mengimpor beberapa libraries yang akan kita butuhkan: stdio.h untuk fungsi input/output standar, string.h untuk operasi-operasi string, stdlib.h untuk alokasi memori dinamis, dan stdbool.h untuk menggunakan tipe data boolean.

//   Kemudian, kita mendefinisikan struktur data node yang akan merepresentasikan setiap node dalam Trie. Setiap node akan memiliki karakter (word), deskripsi (deskrip), status akhir kata (end), dan array pointer ke node lainnya (next).

#include <stdio.h>

#include <string.h>

#include <stdlib.h>

#include <stdbool.h>

```c
typedef struct node {
    char word;
    char deskrip[100];
    bool end;
    struct node *next[256];
} node;
```

//   Variabel root akan merepresentasikan akar Trie, yaitu node pertama dalam struktur Trie.

//   Variabel curr akan digunakan untuk melacak posisi saat ini dalam Trie saat melakukan operasi pencarian atau
//   penambahan.

//   Variabel cek akan digunakan untuk menandai apakah sebuah kata ditemukan atau tidak saat pencarian.

//   Variabel count akan digunakan untuk menghitung jumlah kata yang telah ditambahkan atau ditampilkan.

//   Variabel pilih akan menyimpan pilihan pengguna dari menu.

```c
node *root;

node *curr;


int cek, count = 1, pilih;
```

//   Fungsi create bertujuan untuk membuat node baru dalam Trie dengan karakter awal kata.

//   Pertama-tama, fungsi ini mengalokasikan memori untuk node baru menggunakan malloc.

//   Kemudian, array next pada node tersebut diinisialisasi menjadi NULL untuk setiap elemen.

//   Karakter word pada node tersebut diatur sesuai dengan karakter kata yang diterima.

//   Fungsi mengembalikan pointer ke node yang baru dibuat.

```c
struct node  *create(char kata) {
```

```
    node *temp = (node *)malloc(sizeof(node));

    for (int i = 0; i < 256; i++) {

        temp->next[i] = NULL;

    }

    temp->word = kata;

    return temp;

}
```

//   Fungsi insert digunakan untuk menambahkan sebuah kata ke dalam Trie bersama dengan deskripsinya.

//   Kata yang akan dimasukkan disimpan dalam array str, sedangkan deskripsi disimpan dalam array desk.

//   Fungsi melakukan iterasi melalui setiap karakter dalam kata yang akan dimasukkan.

//   Setiap karakter diubah menjadi indeks dalam array next menggunakan casting ke tipe int.

//   Jika node pada indeks tersebut belum ada, maka node baru dibuat dengan menggunakan fungsi create.

//   Pointer curr akan digeser ke node baru yang telah dibuat.

//   Setelah selesai memasukkan seluruh karakter, deskripsi kata disalin ke node terakhir dan status end diatur menjadi true untuk menandai akhir kata.

```
void insert(char str[], char desk[]) {

    int index;

    for (int i = 0; i < strlen(str); i++) {

        index = (int)str[i];

        if (curr->next[index] == NULL) {

            cek = 1;

            curr->next[index]=create(str[i]);

        }

        curr = curr->next[index];

    }

    strcpy(curr->deskrip, desk);

    curr->end = true;

}
```

//   Fungsi search bertujuan untuk mencari sebuah kata dalam Trie.

//   Kata yang akan dicari disimpan dalam array str.

// Fungsi melakukan iterasi melalui setiap karakter dalam kata yang akan dicari.

// Setiap karakter diubah menjadi indeks dalam array next menggunakan casting ke tipe int.

// Jika node pada indeks tersebut tidak ada, pencarian dihentikan karena kata tidak ditemukan.

// Jika pencarian selesai dan pointer curr menunjuk pada node yang menandai akhir kata, maka variabel cek diatur menjadi 0 untuk menandai bahwa kata tersebut ditemukan.

```c
void search(char str[]) {
    cek = 1;

    curr = root;

    int index;


    for (int i = 0; i < strlen(str); i++) {

        index = (int)str[i];

        if (curr->next[index] == NULL) {

            return;

        }

        curr = curr->next[index];

    }

    if(curr!=NULL&&curr->end==true){

        cek=0;

        return ;

        }

}
```

// Fungsi print digunakan untuk mencetak kata ke layar.

// Jika nilai cek masih 1 dan pengguna memilih opsi 4 pada menu, maka fungsi akan mencetak judul daftar kata.

// Kemudian, fungsi mencetak nomor urut dan kata tersebut.

```c
void print(char str[]) {
    if (cek == 1 && pilih == 4) {

        printf("List of all slang words in the dictionary:\n");

    }

    printf("%d. %s\n", count, str);

    count++;


    return;

}
```

```
//        Fungsi display digunakan untuk menampilkan semua kata yang ada dalam Trie.
//        Fungsi ini menggunakan rekursi untuk melakukan penelusuran dari node ke node dalam Trie.
//        Jika sebuah node menandai akhir kata (end), maka kata tersebut dicetak menggunakan fungsi print.
//        Setelah itu, fungsi akan mencoba melanjutkan penelusuran ke setiap node yang terhubung.
void display(node *curr, char str[], int idx) {
    if (curr->end == true) {
        str[idx] = '\0';
        print(str);
    }


    for (int i = 0; i < 256; i++) {
        if (curr->next[i] != NULL) {
            cek = 1;
            str[idx] = (char)i;
            display(curr->next[i], str, idx + 1);
        }
    }


    return;
}


//        Fungsi startprefix digunakan untuk menampilkan semua kata dalam Trie yang dimulai dengan awalan tertentu.
//        Fungsi ini mencari node yang menunjuk pada awalan yang diberikan dalam Trie.
//        Jika awalan tidak ditemukan, fungsi akan mencetak pesan kesalahan.
//        Jika ditemukan, fungsi akan memanggil fungsi display untuk menampilkan semua kata yang terhubung dari node awalan tersebut.
void startprefix(char str[]) {
    int index = 0;
    node *temp = root;


    for (int i = 0; i < strlen(str); i++) {
        index = (int)str[i];


        if (!temp->next[index]) {
            printf("There is no prefix \"%s\" in the dictionary\n", str);
            return;
```

```c
        }

        temp = temp->next[index];
    }

    printf("Words starts with \"%s\":\n", str);
    char storage[100];
    count = 1;
    strcpy(storage, str);
    display(temp, storage, strlen(str));
    puts("");

    return;
}
```

//   Pada fungsi main, kita pertama-tama membuat akar Trie kosong menggunakan fungsi create.

//   Setelah itu, kita memulai program dengan menjalankan menu interaktif yang memungkinkan pengguna untuk menambahkan kata, mencari kata, menampilkan kata dengan awalan tertentu, menampilkan semua kata, atau keluar dari program.

```c
int main() {
        root=create('*');
    char arr[100], desc[100];
    int dec;

    do {
        printf("1. Release a new slang word\n2. Search a slang word\n3. View all slang words starting with a certain prefix word\n4. View all slang words\n5. Exit\n\n");

        printf("Input pilih: ");
        scanf("%d", &pilih);
        getchar();
        if (pilih == 1) {
            do {
                printf("Input a new slang word [Must be more than 1 characters and contains no space]: ");
                scanf("%[^\n]", arr);
                getchar();
                dec = strlen(arr);
```

```c
        for (int i = 0; i < dec; i++) {
            if (arr[i] == ' ') {
                dec = 1;
            }
        }
    } while (dec == 1);
    dec = 0;
    do {
        printf("Input a new slang word description [Must be more than 2 words]: ");
        scanf("%[^\n]", desc);
        getchar();
        for (int i = 0; i < strlen(desc); i++) {
            if (desc[i] == ' ') {
                dec += 1;
            }
        }
    } while (dec < 2);
    curr = root;
    cek=0;
    insert(arr, desc);
    if (cek == 0) {
        printf("\nSuccessfully updated a slang word.\n");
    } else {
        printf("\nSuccessfully released new slang word.\n");
    }
    printf("Press enter to continue...");
    getchar();
    system("cls");
}

else if (pilih == 2) {
    cek = 0;
    do {
        printf("Input a slang word to be searched [Must be more than 1 characters and contains no space]: ");
        scanf("%[^\n]", arr);
```

```c
            getchar();
            dec = strlen(arr);

            for (int i = 0; i < dec; i++) {
                if (arr[i] == ' ') {
                    dec = 1;
                }
            }
        } while (dec == 1);

        curr = root;
        search(arr);
        if (cek == 1) {
            printf("\nThere is no word \"%s\" in the dictionary.\n", arr);
        } else {
            printf("\nSlang word  : %s\n", arr);
            printf("Description : %s\n\n", curr->deskrip);
        }
        printf("Press enter to continue...");
        getchar();
        system("cls");
    } else if (pilih == 3) {
        printf("Input a prefix to be searched: ");
        scanf("%s", arr);
        getchar();

        cek = 0;
        curr = root;
        startprefix(arr);

        printf("Press enter to continue...");
        getchar();
        system("cls");
    } else if (pilih == 4) {
        cek = 0;
```

```
        count = 1;

        curr = root;

        char storage[100];

        display(curr, storage, 0);

        if (cek == 0) {

            printf("There is no slang word yet in the dictionary.\n");

            printf("Press enter to continue...");

        } else {

            printf("\nPress enter to continue...");

        }

        getchar();

        system("cls");

    }


    } while (pilih != 5);


    printf("Thank you... Have a nice day :)\n");



    return 0;
}
```

Input

1.	Milk	Milk milk milk
2.	Juice	Juice juice juice
3.	Bread	Bread bread bread
4.	Chair	Chair chair chair
5.	Window	Window window window
6.	Phone	Phone phone phone
7.	Paper	Paper paper paper
8.	Flower	Flower flower flower
9.	Shirt	Shirt shirt shirt
10.	Sock	Sock sock sock
11.	Spoon	Spoon spoon spoon
12.	Fork	Fork fork fork
13.	Plate	Plate plate plate
14.	Cup	Cup cup cup
15.	Table	Table table table

ScreenShot

```
1. Release a new slang word
2. Search a slang word
3. View all slang words starting with a certain prefix word
4. View all slang words
5. Exit

Input pilih: 1
Input a new slang word [Must be more than 1 characters and contains no space]: juice
Input a new slang word description [Must be more than 2 words]: juice juice juice

Successfully released new slang word.
Press enter to continue...
```

```
1. Release a new slang word
2. Search a slang word
3. View all slang words starting with a certain prefix word
4. View all slang words
5. Exit

Input pilih: 1
Input a new slang word [Must be more than 1 characters and contains no space]: bread
Input a new slang word description [Must be more than 2 words]: bread bread bread

Successfully released new slang word.
Press enter to continue...
```

```
1. Release a new slang word
2. Search a slang word
3. View all slang words starting with a certain prefix word
4. View all slang words
5. Exit

Input pilih: 1
Input a new slang word [Must be more than 1 characters and contains no space]: chair
Input a new slang word [Must be more than 1 characters and contains no space]: chair
Input a new slang word description [Must be more than 2 words]: chair chair chair

Successfully released new slang word.
Press enter to continue...
```

```
1. Release a new slang word
2. Search a slang word
3. View all slang words starting with a certain prefix word
4. View all slang words
5. Exit

Input pilih: 1
Input a new slang word [Must be more than 1 characters and contains no space]: window
Input a new slang word description [Must be more than 2 words]: window window window

Successfully released new slang word.
Press enter to continue...
```

```
1. Release a new slang word
2. Search a slang word
3. View all slang words starting with a certain prefix word
4. View all slang words
5. Exit

Input pilih: 1
Input a new slang word [Must be more than 1 characters and contains no space]: phone
Input a new slang word description [Must be more than 2 words]: phone phone phone

Successfully released new slang word.
Press enter to continue...
```

```
1. Release a new slang word
2. Search a slang word
3. View all slang words starting with a certain prefix word
4. View all slang words
5. Exit

Input pilih: 1
Input a new slang word [Must be more than 1 characters and contains no space]: paper
Input a new slang word description [Must be more than 2 words]: paper paper paper

Successfully released new slang word.
Press enter to continue...
```

```
1. Release a new slang word
2. Search a slang word
3. View all slang words starting with a certain prefix word
4. View all slang words
5. Exit

Input pilih: 1
Input a new slang word [Must be more than 1 characters and contains no space]: flower
Input a new slang word description [Must be more than 2 words]: flower flower flower

Successfully released new slang word.
Press enter to continue...
```

```
1. Release a new slang word
2. Search a slang word
3. View all slang words starting with a certain prefix word
4. View all slang words
5. Exit

Input pilih: 1
Input a new slang word [Must be more than 1 characters and contains no space]: shirt
Input a new slang word description [Must be more than 2 words]: shirt shirt shirt

Successfully released new slang word.
Press enter to continue...
```

```
1. Release a new slang word
2. Search a slang word
3. View all slang words starting with a certain prefix word
4. View all slang words
5. Exit

Input pilih: 1
Input a new slang word [Must be more than 1 characters and contains no space]: sock
Input a new slang word description [Must be more than 2 words]: sock sock sock

Successfully released new slang word.
Press enter to continue...
```

```
1. Release a new slang word
2. Search a slang word
3. View all slang words starting with a certain prefix word
4. View all slang words
5. Exit

Input pilih: 1
Input a new slang word [Must be more than 1 characters and contains no space]: spoon
Input a new slang word description [Must be more than 2 words]: spoon spoon spoon

Successfully released new slang word.
Press enter to continue...
```

```
1. Release a new slang word
2. Search a slang word
3. View all slang words starting with a certain prefix word
4. View all slang words
5. Exit

Input pilih: 1
Input a new slang word [Must be more than 1 characters and contains no space]: fork
Input a new slang word description [Must be more than 2 words]: fork fork fork

Successfully released new slang word.
Press enter to continue...
```

```
1. Release a new slang word
2. Search a slang word
3. View all slang words starting with a certain prefix word
4. View all slang words
5. Exit

Input pilih: 1
Input a new slang word [Must be more than 1 characters and contains no space]: plate
Input a new slang word description [Must be more than 2 words]: plate plate plate

Successfully released new slang word.
Press enter to continue...
```

```
1. Release a new slang word
2. Search a slang word
3. View all slang words starting with a certain prefix word
4. View all slang words
5. Exit

Input pilih: 1
Input a new slang word [Must be more than 1 characters and contains no space]: cup
Input a new slang word description [Must be more than 2 words]: cup cup cup

Successfully released new slang word.
Press enter to continue...
```

```
1. Release a new slang word
2. Search a slang word
3. View all slang words starting with a certain prefix word
4. View all slang words
5. Exit

Input pilih: 1
Input a new slang word [Must be more than 1 characters and contains no space]: table
Input a new slang word description [Must be more than 2 words]: table table table

Successfully released new slang word.
Press enter to continue...
```

```
1. Release a new slang word
2. Search a slang word
3. View all slang words starting with a certain prefix word
4. View all slang words
5. Exit

Input pilih: 1
Input a new slang word [Must be more than 1 characters and contains no space]: milk
Input a new slang word description [Must be more than 2 words]: milk milk milk

Successfully released new slang word.
Press enter to continue...
```

Searching

1. Juice

```
1. Release a new slang word
2. Search a slang word
3. View all slang words starting with a certain prefix word
4. View all slang words
5. Exit

Input pilih: 2
Input a slang word to be searched [Must be more than 1 characters and contains no space]: juice

Slang word  : juice
Description : juice juice juice

Press enter to continue...
```

2. Phone

```
1. Release a new slang word
2. Search a slang word
3. View all slang words starting with a certain prefix word
4. View all slang words
5. Exit

Input pilih: 2
Input a slang word to be searched [Must be more than 1 characters and contains no space]: phone

Slang word  : phone
Description : phone phone phone

Press enter to continue...
```

3. Paper

```
1. Release a new slang word
2. Search a slang word
3. View all slang words starting with a certain prefix word
4. View all slang words
5. Exit

Input pilih: 2
Input a slang word to be searched [Must be more than 1 characters and contains no space]: paper

Slang word  : paper
Description : paper paper paper

Press enter to continue...
```

4. Shirt

```
1. Release a new slang word
2. Search a slang word
3. View all slang words starting with a certain prefix word
4. View all slang words
5. Exit

Input pilih: 2
Input a slang word to be searched [Must be more than 1 characters and contains no space]: shirt

Slang word  : shirt
Description : shirt shirt shirt

Press enter to continue...
```

5. Cup

```
1. Release a new slang word
2. Search a slang word
3. View all slang words starting with a certain prefix word
4. View all slang words
5. Exit

Input pilih: 2
Input a slang word to be searched [Must be more than 1 characters and contains no space]: cup

Slang word  : cup
Description : cup cup cup

Press enter to continue...
```

Searching Start With Prefix

1. "Ta"
2. "S"
3. "Br"
4. "P"
5. "fo"

```
1. Release a new slang word
2. Search a slang word
3. View all slang words starting with a certain prefix word
4. View all slang words
5. Exit

Input pilih: 3

Input a prefix to be searched: ta
Words starts with "ta":
1. table

Press enter to continue...
```

```
1. Release a new slang word
2. Search a slang word
3. View all slang words starting with a certain prefix word
4. View all slang words
5. Exit

Input pilih: 3

Input a prefix to be searched: s
Words starts with "s":
1. shirt
2. sock
3. spoon

Press enter to continue...
```

```
1. Release a new slang word
2. Search a slang word
3. View all slang words starting with a certain prefix word
4. View all slang words
5. Exit

Input pilih: 3

Input a prefix to be searched: br
Words starts with "br":
1. bread

Press enter to continue...
```

```
1. Release a new slang word
2. Search a slang word
3. View all slang words starting with a certain prefix word
4. View all slang words
5. Exit

Input pilih: 3

Input a prefix to be searched: p
Words starts with "p":
1. paper
2. phone
3. plate

Press enter to continue...
```

```
1. Release a new slang word
2. Search a slang word
3. View all slang words starting with a certain prefix word
4. View all slang words
5. Exit

Input pilih: 3

Input a prefix to be searched: fo
Words starts with "fo":
1. fork

Press enter to continue...
```

Display All

```
1. Release a new slang word
2. Search a slang word
3. View all slang words starting with a certain prefix word
4. View all slang words
5. Exit

Input pilih: 4

List of all slang words in the dictionary:
1. bread
2. chair
3. cup
4. flower
5. fork
6. juice
7. milk
8. paper
9. phone
10. plate
11. shirt
12. sock
13. spoon
14. table
15. window

Press enter to continue...|
```

Exit

```
1. Release a new slang word
2. Search a slang word
3. View all slang words starting with a certain prefix word
4. View all slang words
5. Exit

Input pilih: 5
Thank you... Have a nice day :)

---------------------------------
Process exited after 579.9 seconds with return value 0
Press any key to continue . . . |
```