Projet Cowsay

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Sommaire

1. Présentation du Projet `cowsay`

Le projet débute au premier jour du cours INF203 et s'achève lors la dernière semaine de cours. Cette dernière fait date de rendu (dimanche soir minuit de la dernière semaine). Vous pouvez progresser sur le projet a votre rythme, mais nous vous recommandons de prendre de l'avance par rapport au cours, du moins aucun retard. Par exemple, la partie "Bash" devra être achevée au moment ou les premiers cours de "C" débuteront.

2. Objectif du projet

L'objectif du projet est de découvrir le monde merveilleux de "cowsay". Au cours du projet, vous réaliserez les objectifs suivants:

1. Préliminaires

Découvrir la commande cowsay a travers son manuel (manpage) et l'ensemble des options qu'elle contient.

2. Bash

Implémenter un script Bash qui fait réciter a la vache la suite des nombres premiers, des nombres de Fibonacci, ou toute autre suite exotique de votre choix.

3. C

Recoder cowsay en C, avec de nouvelles fonctionnalités additionnelles de votre choix (comme par exemple la longueur de la queue).

4. Automates

En s'appuyant sur la théorie des automates, implementer un "cow-Tamagoshi" qu'il s'agit de nourrir et faire survivre aussi longtemps que possible.

Préliminaires

Découvrir du code `cowsay` :

```
1 cowsay -h
```

Nous avons donc le résultat suivant:

```
1 cow{say,think} version 3.03, (c) 1999 Tony Monroe
2 Usage: cowsay [-bdgpstwy] [-h] [-e eyes] [-f cowfile]
3           [-l] [-n] [-T tongue] [-W wrapcolumn] [message]
```

Nous apprenons donc que le projet cowsay contient en fait deux commandes, l'une appelée Cowsay et l'autre Cowthink. Cowsay utilise des lignes droites pour relier la vache aux mots prononcés, tandis que cowthink utilise des cercles.

Par exemple, nous utilise `cowsay` en première:

```
cowsay "Hello, my name is JIANG Yilun"
```

Avec les résultats suivant:

```
 _______________________________
< Hello, my name is JIANG Yilun >
 -------------------------------
        \   ^__^
         \  (oo)\_______
            (__)\       )\/\
                ||----w |
                ||     ||
```

Ensuit, nous utilise le commande `cowthink` :

```
cowthink "Hello, my name is JIANG Yilun"
```

Avec les résultats suivant:

```
 _______________________________
( Hello, my name is JIANG Yilun )
 -------------------------------
        o   ^__^
         o  (oo)\_______
            (__)\       )\/\
                ||----w |
                ||     ||
```

En fait, le cowsay ne se limite pas à la forme de la vache. Apres nous utilisons le commande `cowsay -l` , nous pouvons constater que nous avons en fait de nombreux modèles à choisir:

```
$ cowsay -l
Cow files in /opt/homebrew/Cellar/cowsay/3.04_1/share/cows:
beavis.zen blowfish bong bud-frogs bunny cheese cower daemon default dragon
dragon-and-cow elephant elephant-in-snake eyes flaming-sheep ghostbusters
head-in hellokitty kiss kitty koala kosh luke-koala meow milk moofasa moose
mutilated ren satanic sheep skeleton small stegosaurus stimpy supermilker
surgery three-eyes turkey turtle tux udder vader vader-koala www
```

Par exemple, on peut utilise la forme `sheep` :

```
$ cowsay -f sheep hello
 _______
< hello >
 -------
  \
   \
        __
       UooU\.'@@@@@@`.
       \__/(@@@@@@@@@@)
            (@@@@@@@@)
            `YY~~~~YY'
             ||    ||
```

On peut aussi utiliser le vase avec des tuyaux:

```
$ ll | cowsay
 ________________________________________
/ total 8 -rw-r--r--@ 1 yilunjiang staff \
| 3.6K Apr 24 15:03                      |
\ rapport_cowsay_JIANGYilun.md           /
 ----------------------------------------
        \   ^__^
         \  (oo)\_______
            (__)\       )\/\
                ||----w |
                ||     ||
```

En fait, la sortie de cowsay est très pauvre - pratiquement impossible à visualiser très bien. Mais si nous ajoutons la commande -n:

```
$ ll | cowsay -n
 ________________________________________________________________________________
/ total 16                                                                       \
\ -rw-r--r--@ 1 yilunjiang  staff   4.2K Apr 24 15:09 rapport_cowsay_JIANGYilun.md /
 --------------------------------------------------------------------------------
        \   ^__^
         \  (oo)\_______
            (__)\       )\/\
                ||----w |
                ||     ||
```

De cette façon, les informations décrites peuvent être lues de manière plus visuelle.

La commande cowsay a en fait ces petits extras, par exemple, nous pouvons changer les yeux de la vache:

```
$ cowsay -e -- "Hello, my name is JIANG Yilun"
 _______________________________
< Hello, my name is JIANG Yilun >
 -------------------------------
        \   ^__^
         \  (--)\_______
            (__)\       )\/\
                ||----w |
                ||     ||
```

Nous avons même réussi à lui faire cracher sa langue:

```
$ cowsay -T U "Hello, my name is JIANG Yilun"
 _______________________________
< Hello, my name is JIANG Yilun >
 -------------------------------
        \   ^__^
         \  (oo)\_______
            (__)\       )\/\
             U ||----w |
                ||     ||
```

Bash

En fait, le code présenté ci-dessous a été modifié une deuxième fois (après avoir vu la vache folle) et comporte deux sections distinctes : une avec un argument et une sans.

cow_kindergarten

```
###
 # @Author: JIANG Yilun
 # @Date: 2022-04-24 15:15:21
 # @LastEditTime: 2022-04-24 17:55:56
 # @LastEditors: JIANG Yilun
 # @Description:
 # @FilePath: /Projet_cowsay_L1S2/cow_kindergarten.sh
###

if [ $# -eq 0 ]; then
    temp=10
    while [ $temp -gt 0 ]; do
        clear
        cowsay $temp
        sleep 1
        temp=$((temp-1))
    done
else
```

```
    temp=$1
    while [ $temp -gt 0 ]; do
        clear
        cowsay $temp
        sleep 1
        temp=$((temp-1))
    done
fi
```

cow_primaryschool

```
###
 # @Author: JIANG Yilun
 # @Date: 2022-04-24 15:33:12
 # @LastEditTime: 2022-04-24 17:54:01
 # @LastEditors: JIANG Yilun
 # @Description:
 # @FilePath: /Projet_cowsay_L1S2/cow_primaryschool.sh
###

i=1
if [ $# -eq 0 ]; then
    echo "Saissez un nombre:"
    read nombre
    while [ $i -le $nombre ]; do
        clear
        cowsay $i
        sleep 1
        i=$((i+1))
    done
else
    nombre=$1
    while [ $i -le $nombre ]; do
        clear
        cowsay $i
        sleep 1
        i=$((i+1))
    done
fi
```

cow_highschool

```
###
 # @Author: JIANG Yilun
 # @Date: 2022-04-24 15:37:56
 # @LastEditTime: 2022-04-24 17:52:24
 # @LastEditors: JIANG Yilun
 # @Description:
 # @FilePath: /Projet_cowsay_L1S2/cow_highschool.sh
###

i=1

if [ $# -eq 0 ]; then
    echo "Saissez un nombre:"
    read nombre
    while [ $i -le $nombre ]; do
        clear
        cowsay $(($i*$i))
        sleep 1
        i=$((i+1))
    done
else
    nombre=$1
    while [ $i -le $nombre ]; do
        clear
        cowsay $(($i*$i))
        sleep 1
        i=$((i+1))
    done
fi
```

cow_college

```
###
 # @Author: JIANG Yilun
 # @Date: 2022-04-24 15:41:00
 # @LastEditTime: 2022-04-24 17:44:13
 # @LastEditors: JIANG Yilun
 # @Description:
 # @FilePath: /Projet_cowsay_L1S2/cow_college.sh
###

# nombres de Finonacci

i=0
j=1
```

```
14
15 if [ $# -eq 0 ]; then
16     echo "Saissez un nombre:"
17     read nombre
18     while [ $j -lt $nombre ]; do
19         cowsay $j
20         temp=$((i+j))
21         i=$j
22         j=$temp
23         sleep 1
24     done
25 else
26     nombre=$1
27     while [ $j -lt $nombre ]; do
28         cowsay $j
29         temp=$((i+j))
30         i=$j
31         j=$temp
32         sleep 1
33     done
34 fi
```

cow_university

```
1  ###
2   # @Author: JIANG Yilun
3   # @Date: 2022-04-24 15:55:25
4   # @LastEditTime: 2022-04-24 17:42:31
5   # @LastEditors: JIANG Yilun
6   # @Description:
7   # @FilePath: /Projet_cowsay_L1S2/cow_university.sh
8  ###
9
10 nbr_premier() {
11     while [ $i -le $m ]
12     do
13         p=$(($m%$i))
14         if [ $p -eq 0 ]
15         then
16             break
17         else
18             i=$((i+1))
19         fi
20         if [ $i -eq $m ]
21         then
22             if [ $m -eq $n ]
23             then
24                 echo "$m est un nombre premier"
```

```
                cowsay -T U "$m"
            else
                echo "$m est un nombre premier"
                cowsay "$m"
            fi
        fi
    done
}

if [ $# -eq 0 ]; then
    echo "donnez le dernier nombres premiers à calculer"
    read n
    i=2     #le premier nombre premier
    a=$(bc <<< "scale=0; sqrt($n)")  #scale=0 n'affiche pas les décimale, scale=1 la première, etc... sqrt() calcule la racine carré. marche grace à la commande bc
    m=3
    echo "voici sa suite de nombres premiers de $i à $n"
    while [ $m -le $n ]
    do
        echo m:$m
        i=2
        nbr_premier $m
        m=$((m+1))
        sleep 1
    done
else
    n=$1
    i=2     #le premier nombre premier
    a=$(bc <<< "scale=0; sqrt($n)")  #scale=0 n'affiche pas les décimale, scale=1 la première, etc... sqrt() calcule la racine carré. marche grace à la commande bc
    m=3
    echo "voici sa suite de nombres premiers de $i à $n"
    while [ $m -le $n ]
    do
        echo m:$m
        i=2
        nbr_premier $m
        m=$((m+1))
        sleep 1
    done
fi
```

smart_cow

```
###
 # @Author: JIANG Yilun
 # @Date: 2022-04-24 16:27:30
 # @LastEditTime: 2022-04-24 16:40:09
```

```
 # @LastEditors: JIANG Yilun
 # @Description:
 # @FilePath: /Projet_cowsay_L1S2/smart_cow.sh
###


if [ $# -eq 0 ]; then
    echo "Donner l'expression à calculer:"
    read expression
    cowsay -e $(echo "$expression" | bc) $expression
else
    cowsay -e $(echo "$1" | bc) $1
fi
```

crazy_cow

```
###
 # @Author: JIANG Yilun
 # @Date: 2022-04-24 16:44:04
 # @LastEditTime: 2022-04-24 17:57:02
 # @LastEditors: JIANG Yilun
 # @Description:
 # @FilePath: /Projet_cowsay_L1S2/crazy_cow.sh
###

for var in "$@"
do
    if [[ "$var" == "-h" || "$var" == "--help" ]]; then
        echo "Usage: $0 [OPTION]... [FILE]..."
        echo "Print a crazy cow."
    elif [[ "$var" == "-v" || "$var" == "--version" ]]; then
        echo "crazy_cow.sh version 1.0"
    elif [[ "$var" == "-a" || "$var" == "--addition" ]]; then
        sh cow_primaryschool.sh ${@: -1}
    elif [[ "$var" == "-c" || "$var" == "--countdown" ]]; then
        sh cow_kindergarten.sh ${@: -1}
    elif [[ "$var" == "-s" || "$var" == "--square" ]]; then
        sh cow_highschool.sh ${@: -1}
    elif [[ "$var" == "-f" || "$var" == "--finonacci" ]]; then
        sh cow_college.sh ${@: -1}
    elif [[ "$var" == "-p" || "$var" == "--premiere" ]]; then
        sh cow_university.sh ${@: -1}
    elif [[ "$var" == "-S" || "$var" == "--smart" ]]; then
        sh smart_cow.sh ${@: -1}
    fi
done
```

C

Question 1

`affiche_vache` :

```c
int affiche_vache()
{
    printf("\n");
    printf("    \\   ^__^\n");
    printf("     \\  (oo)\\_______\n");
    printf("        (__)\\       )\\/\\\n");
    printf("            ||----w |\n");
    printf("            ||     ||\n");
    printf("\n");
    return 0;
}

int main()
{
    affiche_vache();
}
```

Après la compilation, nous avons pu obtenir les résultats suivants:

```
$ gcc newcow.c && ./a.out


    \   ^__^
     \  (oo)\_______
        (__)\       )\/\
            ||----w |
            ||     ||
```

Question 2

```c
/*
 * @Author: JIANG Yilun
 * @Date: 2022-04-24 18:07:27
 * @LastEditTime: 2022-04-24 18:44:29
 * @LastEditors: JIANG Yilun
 * @Description:
 * @FilePath: /Projet_cowsay_L1S2/newcow.c
 */
```

```c

#include <stdio.h>
#include <string.h>

int affiche_vache (char *eyes, char *tongue)
{
    if (eyes == NULL && tongue == NULL){
        printf("\n");
        printf("    \\   ^__^\n");
        printf("     \\  (oo)\\_______\n");
        printf("        (__)\\       )\\/\\\n");
        printf("            |\u2500\u2500---w |\n");
        printf("            ||     ||\n");
        printf("\n");
        return 0;
    }
    else if (eyes == NULL && tongue \u2260 NULL){
        printf("\n");
        printf("    \\   ^__^\n");
        printf("     \\  (oo)\\_______\n");
        printf("        (__)\\       )\\/\\\n");
        printf("         %s |\u2500\u2500---w |\n",tongue);
        printf("            ||     ||\n");
        printf("\n");
        return 0;
    }
    else if (eyes \u2260 NULL && tongue == NULL){
        printf("\n");
        printf("    \\   ^__^\n");
        printf("     \\  (%s)\\_______\n",eyes);
        printf("        (__)\\       )\\/\\\n");
        printf("            |\u2500\u2500---w |\n");
        printf("            ||     ||\n");
        printf("\n");
        return 0;
    }
    else
    {
        printf("\n");
        printf("    \\   ^__^\n");
        printf("     \\  (%s)\\_______\n",eyes);
        printf("        (__)\\       )\\/\\\n");
        printf("         %s |\u2500\u2500---w |\n",tongue);
        printf("            ||     ||\n");
        printf("\n");
        return 0;
    }
}

int main (int argc, char *argv[])
{
    char *eyes = NULL;
```

```
    char *tongue = NULL;
    char *message = NULL;
    char *tail = NULL;
    for (int i = 1; i < argc; i++)
    {
        if (strcmp(argv[i], "-e") == 0 || strcmp(argv[i], "--eyes") == 0)
        {
            eyes = argv[i+1];
        }
        if (strcmp(argv[i], "-t") == 0 || strcmp(argv[i], "--tongue") == 0)
        {
            tongue = argv[i+1];
        }
    }
    affiche_vache(eyes, tongue);
}
```

Après la compilation, nous avons pu obtenir les résultats suivants:

```
$ gcc test.c && ./a.out -e AA -t U

   \   ^__^
    \  (AA)\_______
       (__)\       )\/\
        U |├ ---w |
          ||     ||
```

Question 3

```
/*
 * @Author: JIANG Yilun
 * @Date: 2022-04-24 18:07:27
 * @LastEditTime: 2022-04-24 21:10:24
 * @LastEditors: JIANG Yilun
 * @Description:
 * @FilePath: /Projet_cowsay_L1S2/newcow.c
 */

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

int affiche_vache(int *length, char *message, char *eyes, char *tongue, int *tail)
{
    printf(" -");
    for (int i = 0; i < *length; i++)
    {
```

```
        printf("-");
    }
    printf("\n");
    printf("< %s >\n", message);
    printf(" -");
    for (int i = 0; i < *length; i++)
    {
        printf("-");
    }
    printf("\n");
    printf("    \\   ^__^\n");
    printf("     \\  (%s)\\_______\n", eyes);
    printf("        (__)\\       )\\/\\");
    for (int i = 0; i < *tail; i++)
    {
        printf("/\\");
    }
    printf("\n");
    printf("         %s ||----w |\n", tongue);
    printf("            ||     ||\n");
    printf("\n");
    return 0;
}

void update() { printf("\033[H\033[J"); }

void gotoxy(x, y) { printf("\033[%d;%dH", x, y); }

int main(int argc, char *argv[])
{
    char *eyes = "oo"; // default eyes
    char *tongue = "  "; // default tongue
    char *message = "--help to display help"; // default message
    int tail = 1; // default tail
    for (int i = 1; i < argc; i++)
    {
        if (strcmp(argv[i], "-e") == 0 || strcmp(argv[i], "--eyes") == 0)
        {
            eyes = argv[i + 1];
        }
        if (strcmp(argv[i], "-T") == 0 || strcmp(argv[i], "--tongue") == 0)
        {
            tongue = argv[i + 1];
        }
        if (strcmp(argv[i], "-m") == 0 || strcmp(argv[i], "--message") == 0)
        {
            message = argv[i + 1];
        }
        if (strcmp(argv[i], "-t") == 0 || strcmp(argv[i], "--tail") == 0)
        {
            tail = atoi(argv[i + 1]);
        }
```

```
        if (strcmp(argv[i], "-h") == 0 || strcmp(argv[i], "--help") == 0)
        {
            printf("\n");
            printf("Usage: newcow [OPTION]...\n");
            printf("\n");
            printf("Options:\n");
            printf("  -e, --eyes=STRING  eyes of the cow (default: oo)\n");
            printf("  -t, --tongue=STRING tongue of the cow (default:  )\n");
            printf("  -m, --message=STRING message to display (default: none)\n");
            printf("  -h, --help          display this help and exit\n");
            printf("\n");
            return 0;
        }
    }
    int length = strlen(message) + 1;
    affiche_vache(&length, message, eyes, tongue, &tail);
}
```

On peut ajouter d'argument "eyes" ou argument "tongue".

S'il n'y a pas de message d'entrée:

```
$ gcc newcow.c && ./a.out -e AA -T U
 ------------------------
< --help to display help >
 ------------------------
    \   ^__^
     \  (AA)\_______
        (__)\       )\/\
         U |├ ---w |
           ||     ||
```

Si je veux obtenir des informations d'aide:

```
$ gcc newcow.c && ./a.out -h

Usage: newcow [OPTION]...

Options:
  -e, --eyes=STRING  eyes of the cow (default: oo)
  -t, --tongue=STRING tongue of the cow (default:  )
  -m, --message=STRING message to display (default: none)
  -h, --help          display this help and exit
```

Bien sûr, la possibilité d'afficher des messages est essentielle:

```
$ gcc newcow.c && ./a.out -e AA -T UU -m "Hello, my name is JIANG Yilun"
 -------------------------------
< Hello, my name is JIANG Yilun >
 -------------------------------
    \   ^__^
     \  (AA)\_______
        (__)\       )\/\
         UU |+-----w |
            ||     ||
```

En même temps, nous pouvons définir la longueur du tail:

```
$ gcc newcow.c && ./a.out -e AA -T UU -m "Hello, my name is JIANG Yilun" -t 10
 -------------------------------
< Hello, my name is JIANG Yilun >
 -------------------------------
    \   ^__^
     \  (AA)\_______
        (__)\       )\/\/\/\/\/\/\/\/\/\/\
         UU |+-----w |
            ||     ||
```

Question 5

```c
/*
 * @Author: JIANG Yilun
 * @Date: 2022-04-25 13:34:08
 * @LastEditTime: 2022-04-26 17:43:29
 * @LastEditors: JIANG Yilun
 * @Description:
 * @FilePath: /Projet_cowsay_L1S2/reading_cow.c
 */

#include <stdio.h>
#include <string.h>
#include <stdlib.h>
#include <unistd.h>
#include <time.h>

#define MAX_LENGTH 512

void affiche_vache(int *length, char *message, char *eyes, char *tongue, int *tail)
{
    printf(" -");
    for (int i = 0; i < *length; i++)
    {
        printf("-");
```

```c
    }
    printf("\n");
    printf("< %s >\n", message);
    printf(" -");
    for (int i = 0; i < *length; i++)
    {
        printf("-");
    }
    printf("\n");
    printf("    \\   ^__^\n");
    printf("     \\  (%s)\\_______\n", eyes);
    printf("        (__)\\       )\\/\\");
    for (int i = 0; i < *tail; i++)
    {
        printf("/\\");
    }
    printf("\n");
    printf("         %s ||----w |\n", tongue);
    printf("            ||     ||\n");
    printf("\n");
}

void update() { printf("\033[H\033[J"); }

void gotoxy(x, y) { printf("\033[%d;%dH", x, y); }

int main(int argc, char *argv[])
{
    FILE *ficher = NULL;
    ficher = fopen(argv[1], "r");
    if (ficher == NULL)
    {
        printf("Error opening file\n");
        return 1;
    }
    else
    {
        char *eyes = "oo";   // default eyes
        char *tongue = "  "; // default tongue
        char message[MAX_LENGTH] = "";  // default message
        int tail = 1;        // default tail
        int length = 0;
        char c;
        while ((c = fgetc(ficher)) != EOF)
        {
            length++;
            affiche_vache(&length, message, eyes, &c, &tail);
            sleep(1);
            update();
            message[length - 1] = c;
            message[length] = '\0';
        }
```

```
        fclose(ficher);
        length++;
        affiche_vache(&length, message, eyes, tongue, &tail);
    }
}
```

Dans le ficher `mot` :

`bonjour, je m'appelle JIANG Yilun`

```
$ gcc reading_cow.c && ./a.out mot

 ---------
< bonjour >
 ---------
    \   ^__^
     \  (oo)\_______
        (__)\       )\/\
          |+---w |
            ||     ||

 -----------------------------------
< bonjour, je m'appelle JIANG Yilun >
 -----------------------------------
    \   ^__^
     \  (oo)\_______
        (__)\       )\/\
            |+---w |
            ||     ||

```

La vache épellera le contenu du document un mot à la fois et mettra le caractère suivant dans sa tongue.

Dans ce fichier, j'ai également utilisé `affiche_vache` pour générer la apparition de la vache.

Automates

Je n'ai pas réussi à concevoir un automate, car je ne pense pas avoir identifié toutes les possibilités. Mais j'ai créé un mini-jeu "CowSay" qui n'utilise pas d'automate.

Les joueurs doivent répondre à des questions de mathématiques pour obtenir de la nourriture, avec une autre chance d'obtenir de la nourriture toutes les heures.

Ce jeu comporte cinq modèles mathématiques : déterminer si un nombre est premier ou non, ajouter, soustraire, multiplier et trouver le mod entre des nombres.

De plus, des événements aléatoires se produiront dans le scénario du jeu et le joueur peut obtenir des effets négatifs, tels que la perte de nourriture ou de life. Ou vous pouvez activer l'effet "ange", qui vous apporte de la nourriture.

En outre, le joueur peut juger de la valeur de la vie par la longueur de la queue.

```c
/*
 * @Author: JIANG Yilun
 * @Date: 2022-04-25 15:51:26
 * @LastEditTime: 2022-05-08 14:24:37
 * @LastEditors: ThearchyHelios
 * @Description:
 * @FilePath: /Projet_cowsay_L1S2/Tamagoshi-vache.c
 */

#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include <unistd.h>
#include <time.h>

#define MAX_LENGTH 512

/*
 * @description: Update(refresh) the Terminal
 * @param {type}: void
 * @return: void
 */
void update() { printf("\033[H\033[J"); }

/*

* @description: Make the pointer to x, y in Terminal
* @param {type}: int x, int y
* @return: void
*/
void gotoxy(x, y) { printf("\033[%d;%dH", x, y); }

int life = 5; // Define the valeur initial to 5

/*

* @description: Print the etat of the cow
* @param {type}: int life
* @return: void
*/
void etat(int life)
```

```
{
    if (life == 0 || life == 10)
    {
        printf("byebyelife");
    }
    else if (life ⩽ 3 && life ⩾ 1 || life ⩽ 9 && life ⩾ 7)
    {
        printf("lifesucks");
    }
    else if (life ⩽ 6 && life ⩾ 4 || life)
    {

        printf("liferocks");
    }
}

/*

* @description: Print the cow
* @param {type}: int *length_vache(for define the length of divise), char *message_vache(To print the message), char *eyes_vache(To print the cow's eyes(in default: "oo")), char *tongue_vache(To print the cow's tongue), int *tail_vache(To print the cow's tail(This is also the life of cow)), int time_tick_vache(To define how much time the anmie will take), int hour, int minite, int food
* @return: void
*/
void affiche_vache(int *length_vache, char *message_vache, char *eyes_vache, char *tongue_vache, int *tail_vache, int time_tick_vache, int hour, int minite, int food)
{
    update();
    for (int i = 0; i < time_tick_vache; i++)
    {
        update();
        gotoxy(0, 0);
        printf("Time for now: %d:%d\tFood: %d\n", hour, minite, food);
        gotoxy(5, 0);
        time_t t;
        t = time(NULL);
        if (t % 2 == 0)
        {
            printf(" -");
            for (int i = 0; i ⩽ *length_vache; i++)
            {
                printf("-");
            }
            printf("\n");
            printf("< %s >\n", message_vache);
            printf(" -");
            for (int i = 0; i ⩽ *length_vache; i++)
            {
                printf("-");
            }
```

```
            printf("\n");
            printf("    \\   ^__^\n");
            printf("     \\  (%s)\\_______\n", eyes_vache);
            printf("        (__)\\       )\\/\");
            for (int i = 0; i < *tail_vache; i++)
            {
                printf("/\\");
            }
            printf("\n");
            printf("         %s ||--- w ||\n", tongue_vache);
            printf("            ||     ||\n");
            printf("\n");
        }
        else
        {
            printf(" -");
            for (int i = 0; i <= *length_vache; i++)
            {
                printf("-");
            }
            printf(" \n");
            printf("< %s >\n", message_vache);
            printf(" -");
            for (int i = 0; i <= *length_vache; i++)
            {
                printf("-");
            }
            printf(" \n");
            printf("     \\   ^__^\n");
            printf("      \\  (%s)\\_______\n", "oo");
            printf("         (__)\\       )\\/\");
            for (int i = 0; i < *tail_vache; i++)
            {
                printf(" /\\");
            }
            printf(" \n");
            printf("          %s ||--- w ||\n", "  ");
            printf("             ||     ||\n");
            printf(" \n");
        }
        // gotoxy(10, 0);
        sleep(1);
    }
}

/*
* @description: count the time
* @param {type}: int *hour, int *minite, int *food
* @return: arr[hour, minite]
*/
void time_count(int time_tick, int hour, int minite, int arr[])
{
```

```c
    minite += 5;
    if (minite >= 60)
    {
        hour += 1;
        minite -= 60;
    }
    if (hour >= 24)
    {
        hour -= 24;
    }
    arr[0] = hour;
    arr[1] = minite;
}

/*
* @description: check if the enter number is a prime number
* @param {type}: int nombre
* @return: int
*/

int check_prime_number(int nombre)
{
    int i;
    for (i = 2; i < nombre; i++)
    {
        if (nombre % i == 0)
        {
            return 0;
        }
    }
    return 1;
}

/*
* @description: Main function
* @param {type}: int argc, char *argv[]
* @return: int
*/

int main(int argc, char *argv[])
{
    // Begin the game, define the variables
    int tail = 1;
    int life = 5;
    int food = 10;
    int time_tick = 5;
    char *eyes = "oo";
    char *tongue = "  ";
    int minite = 0;
    int hour = 0;

    // Define the opening message
```

```
193     char message[MAX_LENGTH] = "Welcome to the COWSAY Game!";
194     int length = strlen(message);
195     tongue = "U ";
196     affiche_vache(&length, message, eyes, tongue, &tail, time_tick, hour, minite,
    food);
197 
198     // Define the message of providing the name of the player
199     strcpy(message, "Please enter your name: ");
200     // *message = "Please enter your name: ";
201     length = strlen(message);
202     affiche_vache(&length, message, eyes, tongue, &tail, 2, hour, minite, food);
203 
204     // Define the name of the player and get the name from keyboard.
205     char name[20];
206     scanf("%s", name);
207 
208     // Welcome the player
209     strcpy(message, "Hello ");
210     strcat(message, name);
211     length = strlen(message);
212     affiche_vache(&length, message, eyes, tongue, &tail, time_tick, hour, minite,
    food);
213 
214     // Define the speed of the game, (4) for super fast (developer mode xd)
215     strcpy(message, "Please choose the speed of the game: (1) for slow, (2) for
    medium (default), (3) for fast");
216     length = strlen(message);
217     affiche_vache(&length, message, eyes, tongue, &tail, 1, hour, minite, food);
218 
219     // Define the speed of the game, and get the value from keyboard.
220     int game_speed;
221     scanf("%d", &game_speed);
222 
223     if (game_speed == 1)
224     {
225         strcpy(message, "You chose the slow speed, the game will be played in 10
    seconds");
226         length = strlen(message);
227         affiche_vache(&length, message, eyes, tongue, &tail, time_tick, hour,
    minite, food);
228         time_tick = 8;
229     }
230     else if (game_speed == 2)
231     {
232         strcpy(message, "You chose the medium speed, the tivk will be 5 seconds");
233         length = strlen(message);
234         affiche_vache(&length, message, eyes, tongue, &tail, time_tick, hour,
    minite, food);
235         time_tick = 5;
236     }
237     else if (game_speed == 3)
238     {
```

```
239         strcpy(message, "You chose the fast speed, the tick will be 3 seconds");
240         length = strlen(message);
241         affiche_vache(&length, message, eyes, tongue, &tail, time_tick, hour,
    minite, food);
242         time_tick = 3;
243     }
244     else if (game_speed == 4)
245     {
246         strcpy(message, "You chose the super fast speed, the tick will be 1
    seconds");
247         length = strlen(message);
248         affiche_vache(&length, message, eyes, tongue, &tail, time_tick, hour,
    minite, food);
249         time_tick = 1;
250     }
251     else
252     {
253         strcpy(message, "You chose the wrong thing, so the game will play in default
    speed, the tick will be 5 seconds");
254         length = strlen(message);
255         affiche_vache(&length, message, eyes, tongue, &tail, time_tick, hour,
    minite, food);
256         time_tick = 5;
257     }
258 
259     int i = 0; // i is the number of the loop, not using later but just left there
    if needed
260 
261     while (life > 0 && life < 10)
262     {
263         // Count the time, with returning the value of the time in an array:
    arr[hour, minite]
264         int arr[2];
265         strcpy(message, "...");
266         length = strlen(message);
267         time_count(time_tick, hour, minite, arr);
268         hour = arr[0];
269         minite = arr[1];
270         tail = life;
271         affiche_vache(&length, message, eyes, tongue, &tail, time_tick, hour,
    minite, food);
272 
273         i++;
274         update();
275 
276         // Check if minite is equal to 60, if yes its time to play a game/
277         if (minite == 0)
278         {
279             // Define the message of playing game.
280             strcpy(message, "It's time to think about something!");
281             length = strlen(message);
```

```
282             affiche_vache(&length, message, eyes, tongue, &tail, time_tick, hour,
    minite, food);
283 
284             // Define a random number between 1 to 5, to chose which kind of math
    problem we will use.
285             int random_number = rand() % (5) + 1;
286             srand(time(NULL)); // Initialize the random number generator.
287 
288             // If random is equal to 1 then we will use the prime problem.
289             if (random_number == 1)
290             {
291                 // Define the message of the prime problem, from 0 to 100.
292                 int nombre_premier = rand() % 100;
293                 // Initialize the message to be displayed.
294                 strcpy(message, "Is it a prime number? (1) for yes, (2) for no: ");
295                 // Make the prime number to be displayed.
296                 char str_nombre_premier[MAX_LENGTH] = "";
297                 sprintf(str_nombre_premier, "%d", nombre_premier);
298                 // Make message and prime number to be together.
299                 strcat(message, str_nombre_premier);
300 
301                 length = strlen(message);
302                 affiche_vache(&length, message, eyes, tongue, &tail, time_tick,
    hour, minite, food);
303 
304                 // Get the answer from keyboard.
305                 int answer = 0;
306                 scanf("%d", &answer);
307                 if (answer == 1)
308                 {
309                     if (check_prime_number(nombre_premier))
310                     {
311                         strcpy(message, "Yes, it is a prime number! You got it! Food
    + 2");
312                         length = strlen(message);
313                         eyes = "^^";
314                         tongue = "~~";
315                         affiche_vache(&length, message, eyes, tongue, &tail,
    time_tick, hour, minite, food);
316                         food += 2;
317                     }
318                     else
319                     {
320                         strcpy(message, "No, it is not a prime number! You lost
    it!");
321                         length = strlen(message);
322                         affiche_vache(&length, message, eyes, tongue, &tail,
    time_tick, hour, minite, food);
323                     }
324                 }
325                 else
326                 {
```

```
                    if (check_prime_number(nombre_premier))
                    {
                        strcpy(message, "Yes, it is a prime number! You lost it!");
                        length = strlen(message);
                        affiche_vache(&length, message, eyes, tongue, &tail,
time_tick, hour, minite, food);
                    }
                    else
                    {
                        strcpy(message, "No, it is not a prime number! You got it!
Food + 2");
                        length = strlen(message);
                        eyes = "^^";
                        tongue = "~~";
                        affiche_vache(&length, message, eyes, tongue, &tail,
time_tick, hour, minite, food);
                        food += 2;
                    }
                }
            }
            // If random is equal to 2 then we will use the addition problem.
            else if (random_number == 2)
            {
                // Define the 2 values of the addition problem, from 0 to 100.
                int nombre_1 = rand() % 100;
                int nombre_2 = rand() % 100;
                // Initialize the message to be displayed.
                strcpy(message, "What is the sum of ");
                // Make the two numbers to be displayed.
                char str_nombre_1[MAX_LENGTH] = "";
                char str_nombre_2[MAX_LENGTH] = "";
                sprintf(str_nombre_1, "%d", nombre_1);
                sprintf(str_nombre_2, "%d", nombre_2);
                strcat(message, str_nombre_1);
                strcat(message, " and ");
                strcat(message, str_nombre_2);
                strcat(message, ": ");

                length = strlen(message);
                affiche_vache(&length, message, eyes, tongue, &tail, time_tick,
hour, minite, food);

                // Get the answer from keyboard.
                int answer = 0;
                scanf("%d", &answer);
                if (answer == nombre_1 + nombre_2)
                {
                    strcpy(message, "Yes, it is the sum of ");
                    strcat(message, str_nombre_1);
                    strcat(message, " and ");
                    strcat(message, str_nombre_2);
                    strcat(message, "! You got it! Food + 2");
```

```
                    length = strlen(message);
                    eyes = "^^";
                    tongue = "~~";
                    affiche_vache(&length, message, eyes, tongue, &tail, time_tick,
hour, minite, food);
                    food += 2;
                }
                else
                {
                    strcpy(message, "No, it is not the sum of ");
                    strcat(message, str_nombre_1);
                    strcat(message, " and ");
                    strcat(message, str_nombre_2);
                    strcat(message, "! You lost it!");
                    length = strlen(message);
                    affiche_vache(&length, message, eyes, tongue, &tail, time_tick,
hour, minite, food);
                }
            }
            // multiplication
            else if (random_number == 3)
            {
                int nombre_1 = rand() % 100;
                int nombre_2 = rand() % 10;
                strcpy(message, "What is the product of ");
                char str_nombre_1[MAX_LENGTH] = "";
                char str_nombre_2[MAX_LENGTH] = "";
                sprintf(str_nombre_1, "%d", nombre_1);
                sprintf(str_nombre_2, "%d", nombre_2);
                strcat(message, str_nombre_1);
                strcat(message, " and ");
                strcat(message, str_nombre_2);
                strcat(message, ": ");

                length = strlen(message);
                affiche_vache(&length, message, eyes, tongue, &tail, time_tick,
hour, minite, food);
                int answer = 0;
                scanf("%d", &answer);
                if (answer == nombre_1 * nombre_2)
                {
                    strcpy(message, "Yes, it is the product of ");
                    strcat(message, str_nombre_1);
                    strcat(message, " and ");
                    strcat(message, str_nombre_2);
                    strcat(message, "! You got it! Food + 2");
                    length = strlen(message);
                    eyes = "^^";
                    tongue = "~~";
                    affiche_vache(&length, message, eyes, tongue, &tail, time_tick,
hour, minite, food);
                    food += 2;
```

```
423                 }
424                 else
425                 {
426                     strcpy(message, "No, it is not the product of ");
427                     strcat(message, str_nombre_1);
428                     strcat(message, " and ");
429                     strcat(message, str_nombre_2);
430                     strcat(message, "! You lost it!");
431                     length = strlen(message);
432                     affiche_vache(&length, message, eyes, tongue, &tail, time_tick,
    hour, minite, food);
433                 }
434             }
435             // difference
436             else if (random_number == 4)
437             {
438                 int nombre_1 = rand() % 100;
439                 int nombre_2 = rand() % 100;
440                 strcpy(message, "What is the difference of ");
441                 char str_nombre_1[MAX_LENGTH] = "";
442                 char str_nombre_2[MAX_LENGTH] = "";
443                 sprintf(str_nombre_1, "%d", nombre_1);
444                 sprintf(str_nombre_2, "%d", nombre_2);
445                 strcat(message, str_nombre_1);
446                 strcat(message, " and ");
447                 strcat(message, str_nombre_2);
448                 strcat(message, ": ");
449 
450                 length = strlen(message);
451                 affiche_vache(&length, message, eyes, tongue, &tail, time_tick,
    hour, minite, food);
452                 int answer = 0;
453                 scanf("%d", &answer);
454                 if (answer == nombre_1 - nombre_2)
455                 {
456                     strcpy(message, "Yes, it is the difference of ");
457                     strcat(message, str_nombre_1);
458                     strcat(message, " and ");
459                     strcat(message, str_nombre_2);
460                     strcat(message, "! You got it! Food + 2");
461                     length = strlen(message);
462                     eyes = "^^";
463                     tongue = "~~";
464                     affiche_vache(&length, message, eyes, tongue, &tail, time_tick,
    hour, minite, food);
465                     food += 2;
466                 }
467                 else
468                 {
469                     strcpy(message, "No, it is not the difference of ");
470                     strcat(message, str_nombre_1);
471                     strcat(message, " and ");
```

```
472                     strcat(message, str_nombre_2);
473                     strcat(message, "! You lost it!");
474                     length = strlen(message);
475                     affiche_vache(&length, message, eyes, tongue, &tail, time_tick,
    hour, minite, food);
476                 }
477             }
478             // mod
479             else if (random_number == 5)
480             {
481                 int nombre_1 = rand() % 100;
482                 int nombre_2 = rand() % 10;
483                 strcpy(message, "What is the mod of ");
484                 char str_nombre_1[MAX_LENGTH] = "";
485                 char str_nombre_2[MAX_LENGTH] = "";
486                 sprintf(str_nombre_1, "%d", nombre_1);
487                 sprintf(str_nombre_2, "%d", nombre_2);
488                 strcat(message, str_nombre_1);
489                 strcat(message, " and ");
490                 strcat(message, str_nombre_2);
491                 strcat(message, ": ");
492 
493                 length = strlen(message);
494                 affiche_vache(&length, message, eyes, tongue, &tail, time_tick,
    hour, minite, food);
495                 int answer = 0;
496                 scanf("%d", &answer);
497                 if (answer == nombre_1 % nombre_2)
498                 {
499                     strcpy(message, "Yes, it is the mod of ");
500                     strcat(message, str_nombre_1);
501                     strcat(message, " and ");
502                     strcat(message, str_nombre_2);
503                     strcat(message, "! You got it! Food + 2");
504                     length = strlen(message);
505                     eyes = "^^";
506                     tongue = "~~";
507                     affiche_vache(&length, message, eyes, tongue, &tail, time_tick,
    hour, minite, food);
508                     food += 2;
509                 }
510                 else
511                 {
512                     strcpy(message, "No, it is not the mod of ");
513                     strcat(message, str_nombre_1);
514                     strcat(message, " and ");
515                     strcat(message, str_nombre_2);
516                     strcat(message, "! You lost it!");
517                     length = strlen(message);
518                     affiche_vache(&length, message, eyes, tongue, &tail, time_tick,
    hour, minite, food);
519                 }
```

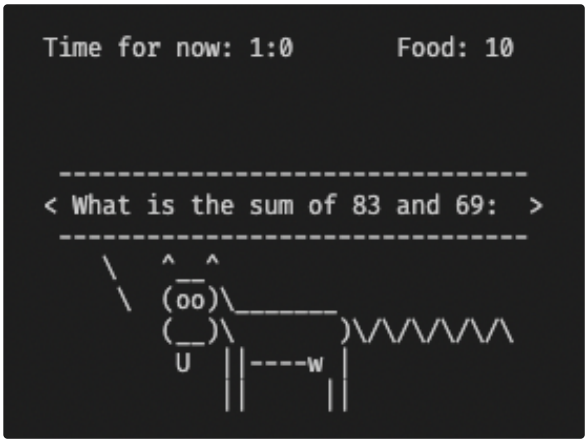
```
            }
        }

        // If it's 6h, 12h, 18h, 24h then its time to eat, the player can choose if they want to feed the cow or not
        if (hour % 6 == 0 && minite == 0)
        {
            strcpy(message, "It's time to eat! Do you want to eat? (1 for yes, food - 5, life + 2; 0 for no, life - random number)");
            length = strlen(message);
            affiche_vache(&length, message, eyes, tongue, &tail, time_tick, hour, minite, food);

            // Ask for the player if he wants to feed
            int answer = 0;
            scanf("%d", &answer);
            if (answer == 1)
            {
                if (food > 0)
                {
                    food -= 5;
                    strcpy(message, "You ate! Food - 5");
                    length = strlen(message);
                    life += 2;
                    eyes = "^^";
                    tongue = "~~";
                    affiche_vache(&length, message, eyes, tongue, &tail, time_tick, hour, minite, food);
                }
                else
                {
                    strcpy(message, "You don't have enough food!");
                    length = strlen(message);
                    int random_number = (rand() % (life - 2)) + 1;
                    life -= random_number;
                    eyes = "~~";
                    tongue = "^";
                    affiche_vache(&length, message, eyes, tongue, &tail, time_tick, hour, minite, food);
                }
            }
            else
            {
                int random_number = (rand() % (life - 2)) + 1;
                life -= random_number;
                strcpy(message, "You didn't eat! Life - ");
                char str_random_number[MAX_LENGTH] = "";
                sprintf(str_random_number, "%d", random_number);
                strcat(message, str_random_number);
                length = strlen(message);
                eyes = "~~";
                tongue = "^";
```

```
567                 affiche_vache(&length, message, eyes, tongue, &tail, time_tick,
    hour, minite, food);
568             }
569         }
570         // random event
571         // Thunder: life - 2
572         if (hour + minite == rand() % 100)
573         {
574             strcpy(message, "It's a thunder! You lost life!");
575             length = strlen(message);
576             life -= 2;
577             eyes = "~~";
578             tongue = "^";
579             affiche_vache(&length, message, eyes, tongue, &tail, time_tick, hour,
    minite, food);
580         }
581         // Hunger: food - 4
582         else if (hour + minite == rand() % 100)
583         {
584             strcpy(message, "It's a hunger! You lost food!");
585             length = strlen(message);
586             food -= 4;
587             eyes = "~~";
588             tongue = "^";
589             affiche_vache(&length, message, eyes, tongue, &tail, time_tick, hour,
    minite, food);
590         }
591         // Fire: life - 2 && food - 2
592         else if (hour + minite == rand() % 100)
593         {
594             strcpy(message, "It's a fire! You lost life and food!");
595             length = strlen(message);
596             life -= 2;
597             food -= 2;
598             eyes = "~~";
599             tongue = "^";
600             affiche_vache(&length, message, eyes, tongue, &tail, time_tick, hour,
    minite, food);
601         }
602         // Mercy: food + 5
603         else if (hour + minite == rand() % 100)
604         {
605             strcpy(message, "Mercy is coming! Food + 5");
606             length = strlen(message);
607             eyes = "^^";
608             tongue = "~~";
609             food += 5;
610             affiche_vache(&length, message, eyes, tongue, &tail, time_tick, hour,
    minite, food);
611         }
612     }
613     if (life <= 0)
```

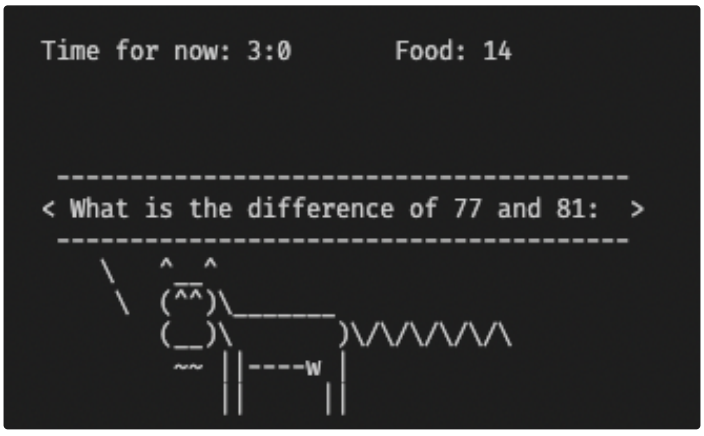
```
614     {
615         strcpy(message, "You died because of hunger! Game over!");
616         length = strlen(message);
617         eyes = "xx";
618         tongue = "U ";
619         affiche_vache(&length, message, eyes, tongue, &tail, time_tick, hour,
    minite, food);
620     }
621     else if (life ⩾ 10)
622     {
623         strcpy(message, "You died because of trop plein! Game over!");
624         length = strlen(message);
625         eyes = "xx";
626         tongue = "U ";
627         affiche_vache(&length, message, eyes, tongue, &tail, time_tick, hour,
    minite, food);
628     }
629 }
630
```

Problème Mathématique

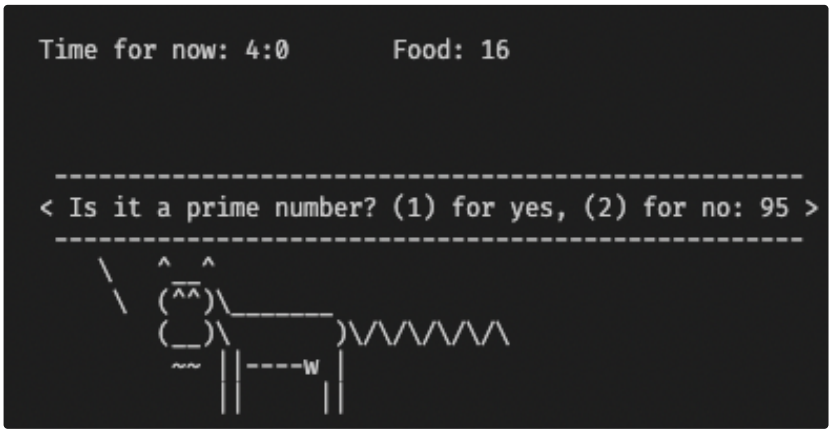
Case addition:



Case difference:

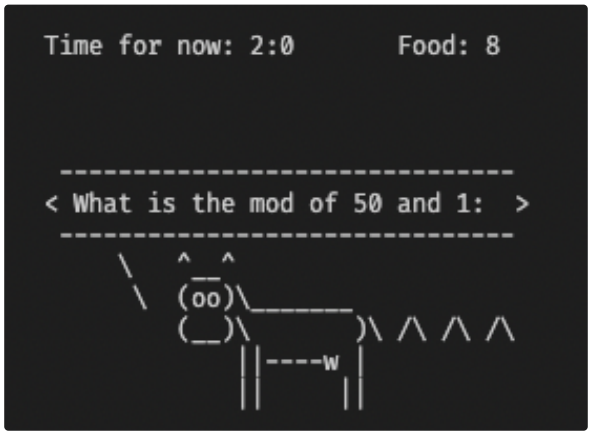


Case nombre prime:



Case multiplier:

Case mod:



Temp de manger

```
Time for now: 6:0       Food: 22


 ------------------------------------------------------------------------------------------------
< It's time to eat! Do you want to eat? (1 for yes, food - 5, life + 2; 0 for no, life - random number) >
 ------------------------------------------------------------------------------------------------
    \   ^__^
     \  (oo)\_______
        (__)\       )\ /\ /\ /\ /\ /\
            ||----w |
            ||     ||
```

Mort de faim

```
Time for now: 6:35      Food: 27


 ---------------------------------------
< You died because of hunger! Game over! >
 ---------------------------------------
    \   ^__^
     \  (oo)\_______
        (__)\       )\ /\ /\
            ||----w |
            ||     ||
```