

# 情報処理 2 - 前期第 5 回課題

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## 1 はじめに

この課題のプログラムは以下の環境での動作が確認されている：

- OS: NixOS 25.11 Xantusia, Linux 7.0.6 x86\_64
- CC: GCC 15.2.0
- CFLAGS: -g -O1 -Wall -Wpedantic
- ファイルエンコーディング: UTF-8

## 2 課題 1

与えられた文字列内を探索し、特定の文字の最初に表れる添字を返す関数 `str_char` を作成する、

課題 1 のプログラム

```
1 #include <stdio.h>
2
3 #define BUFF_SZ 256
4
5 int str_char(const char s[], int c) {
6     int idx = 0;
7     while (s[idx] != '\0') {
8         if (s[idx] == (char)c) {
9             return idx + 1;
10        }
11        idx++;
12    }
13
14    return -1;
15 }
16
17 int main(void) {
18     char buff[BUFF_SZ] = {0};
19     char query = 0;
20
21     printf("Input String: ");
22     fgets(buff, BUFF_SZ, stdin);
23
24     printf("Input Search Character: ");
25     scanf("%c", &query);
26
27     printf("%c, %s\n", query, buff);
28
29     int ret = str_char(buff, query);
30     if (ret != -1) {
31         printf("Found %c at %d\n", query, ret);
```

```

32     } else {
33         printf("Queried character not found.\n");
34     }
35
36     return 0;
37 }

```

## 2.1 実行結果

```

report cc ~/Documents/nit-info-proc-2-S1/src/build/cls05 $ ./a1
Input String: grgggf4gt
Input Search Character: r
r, grgggf4gt

Found r at 2
report cc ~/Documents/nit-info-proc-2-S1/src/build/cls05 $ ./a1
Input String: jkglriioifu
Input Search Character: i
i, jkglriioifu

Found i at 6
report cc ~/Documents/nit-info-proc-2-S1/src/build/cls05 $ ./a1
Input String: jlkgsfj643a
Input Search Character: 6
6, jlkgsfj643a

Found 6 at 9
report cc ~/Documents/nit-info-proc-2-S1/src/build/cls05 $ ./a1
Input String: jgjdn3r
Input Search Character: z
z, jgjdn3r

Queried character not found.
report cc ~/Documents/nit-info-proc-2-S1/src/build/cls05 $

```

図1: 課題 1 の実行結果

## 3 課題 2

入力された文字列の文字と文字コードを表示するプログラム, なお文字列の入力には `getchar` 関数を用いること.

課題 2 のプログラム

```

1 #include <stdio.h>
2
3 #define BUFF_SZ 256
4
5 int main(void) {
6     char buff[BUFF_SZ] = {0};
7     int cnt = 0;
8
9     printf("Input String: ");

```

```

10 while ((buff[cnt] = getchar()) != '\n') {
11     cnt++;
12 };
13 buff[cnt] = '\0';
14
15 int i = 0;
16 while (buff[i] != '\0') {
17     printf(
18         "Char: %c, ASCII Code: 0x%X (%d)\n",
19         buff[i], (int)buff[i], (int)buff[i]
20     );
21     i++;
22 }
23
24 return 0;
25 }

```

### 3.1 実行結果

```

report cc ~/Documents/nit-info-proc-2-S1/src/build/cls05 $ ./a2
Input String: abcdef ABCDEF
Char: a, ASCII Code: 0x61 (97)
Char: b, ASCII Code: 0x62 (98)
Char: c, ASCII Code: 0x63 (99)
Char: d, ASCII Code: 0x64 (100)
Char: e, ASCII Code: 0x65 (101)
Char: f, ASCII Code: 0x66 (102)
Char: , ASCII Code: 0x20 (32)
Char: A, ASCII Code: 0x41 (65)
Char: B, ASCII Code: 0x42 (66)
Char: C, ASCII Code: 0x43 (67)
Char: D, ASCII Code: 0x44 (68)
Char: E, ASCII Code: 0x45 (69)
Char: F, ASCII Code: 0x46 (70)
report cc ~/Documents/nit-info-proc-2-S1/src/build/cls05 $ ./a2
Input String: Hello World!
Char: H, ASCII Code: 0x48 (72)
Char: e, ASCII Code: 0x65 (101)
Char: l, ASCII Code: 0x6C (108)
Char: l, ASCII Code: 0x6C (108)
Char: o, ASCII Code: 0x6F (111)
Char: , ASCII Code: 0x20 (32)
Char: W, ASCII Code: 0x57 (87)
Char: o, ASCII Code: 0x6F (111)
Char: r, ASCII Code: 0x72 (114)
Char: l, ASCII Code: 0x6C (108)
Char: d, ASCII Code: 0x64 (100)
Char: !, ASCII Code: 0x21 (33)
report cc ~/Documents/nit-info-proc-2-S1/src/build/cls05 $ ./a2
Input String: GNIT
Char: G, ASCII Code: 0x47 (71)
Char: N, ASCII Code: 0x4E (78)
Char: I, ASCII Code: 0x49 (73)
Char: T, ASCII Code: 0x54 (84)
report cc ~/Documents/nit-info-proc-2-S1/src/build/cls05 $ █

```

図2: 課題 2 の実行結果

## 4 課題 3

入力した文字列の並びを反転させる関数 **rev\_string** を作成する.

課題 3 のプログラム

```
1  #include <stdio.h>
2
3  #define BUFF_SZ 256
4
5  void rev_string(char s[]) {
6      int str_sz = 0;
7      char tmp = 0;
8
9      do {
10         str_sz++;
11     } while (s[str_sz] != '\0' && str_sz < BUFF_SZ);
12     str_sz--; // remove null terminator from count
13
14     for (int i = 0; i < str_sz/2; i++) {
15         tmp = s[str_sz - 1 - i];
16         s[str_sz - 1 - i] = s[i];
17         s[i] = tmp;
18     }
19 }
20
21 int main(void) {
22     char buff[BUFF_SZ] = {0};
23
24     printf("Input String: ");
25     fgets(buff, BUFF_SZ, stdin);
26
27     printf("Got: %s\n", buff);
28
29     rev_string(buff);
30
31     printf("Rev: %s\n", buff);
32
33     return 0;
34 }
```

## 4.1 実行結果

```
report cc ~/Documents/nit-info-proc-2-S1/src/build/cls05 $ ./a3
Input String: abcdef
Got: abcdef

Rev: fedcba

report cc ~/Documents/nit-info-proc-2-S1/src/build/cls05 $ ./a3
Input String: 3.141592
Got: 3.141592

Rev: 295141.3

report cc ~/Documents/nit-info-proc-2-S1/src/build/cls05 $ ./a3
Input String: won
Got: won

Rev: now

report cc ~/Documents/nit-info-proc-2-S1/src/build/cls05 $ █
```

図3: 課題3のプログラム