### 課題 11-1〜11-5 のプログラム例

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

int count(int *a, int n, int x);
int fibo(int x);
int count_char(char *str, int n, char ch);
int todecimal(int *a, int n, int i);
int isprime2(int num, int n);

int count(int *a, int n, int x)
{
    if(n > 0) {
        if(a[n] == x) {
            return 1 + count(a, n-1, x);
        } else {
            return 0 + count(a, n-1, x);
        }
    } else {
        if(a[n] == x) {
            return 1;
        } else {
            return 0;
        }
    }
}

int fibo(int x)
{
    if(x==0) {
        return 0;
    } else if(x==1) {
        return 1;
    } else {
        return fibo(x-1) + fibo(x-2);
    }
}

int count_char(char *str, int n, char ch)
{
    if(str[n] != '\0') {
        if(str[n] == ch) {
            return 1 + count_char(str, n+1, ch);
        } else {
            return 0 + count_char(str, n+1, ch);
        }
    } else {
        return 0;
    }
}

int todecimal(int *a, int n, int i)
{
    if(n > 0) {
        return a[n]*pow(2, i) + todecimal(a, n-1, i+1);
    } else {
        return a[n]*pow(2, i);
    }
}

int isprime2(int num, int n)
{
    if(num != n) {
        if(num % n == 0) {
            return 0;
        } else {
            return isprime2(num, n+1);
        }
    } else {
        return num;
    }
}

int main(void)
{
    //count
    int a1[6] = {7, 8, 6, 7, 1, 7};
    int a2[4] = {6, 1, 9, 6};
    printf("%d\n", count(a1, 5, 7));
    printf("%d\n", count(a2, 3, 6));

    //fibo
    int i;
    for(i=0; i<20; i++) {
        printf("%d ", fibo(i));
    }
    printf("\n");

    //count_char
    char str1[] = "Hello!";
    char str2[] = "Good Job!!!!";
    printf("%d\n", count_char(str1, 0, 'l'));
    printf("%d\n", count_char(str2, 0, 'o'));
    printf("%d\n", count_char(str2, 0, '!'));

    //todecimal
    int a3[4] = {1, 1, 0, 1};
    int a4[8] = {1, 1, 1, 0, 1, 1, 0, 1};
    printf("%d\n", todecimal(a3, 3, 0));
    printf("%d\n", todecimal(a4, 7, 0));

    //isprime2
    for(i=2; i<=100; i++) {
        printf("%d, ", isprime2(i, 2));
    }
    printf("\n");

    return 0;
}
```