課題 9-1 のプログラム例

```c
#include <stdio.h>

int max1(int a, int b, int c)
{
    int result = -1;
    if((a > b && b > c)  ||
       (a > c && c > b)  ||
       (a > b && b == c) ||
       (a == b && b > c) ||
       (a == c && c > b) ||
       (a == b && b == c)) {
        result = a;
    }
    if((b > a && a > c)  ||
       (b > c && c > a)  ||
       (b > a && a == c) ||
       (b == a && a > c) ||
       (b == c && c > a) ||
       (b == a && a == c)) {
        result = b;
    }
    if((c > a && a > b)  ||
       (c > b && b > a)  ||
       (c > a && a == b) ||
       (c == a && a > b) ||
       (c == b && b > a) ||
       (c == a && a == b)) {
        result = c;
    }
    return result;
}

//改善案その 1 で作った場合
// （上記の関数名と重複しないよう変えてある）
int max1s(int a, int b, int c)
{
    int result;
    if((a > b && b > c) ||
       (a > c && c > b) ||
       (a > b && b == c) ||
       (a == b && b > c) ||
       (a == c && c > b) ||
       (a == b && b == c)) {
        result = a;
    } else if(
       (b > a && a > c) ||
       (b > c && c > a) ||
       (b > a && a == c) ||
       (b == c && c > a)) {
        result = b;
    } else {
```

```c
        result = c;
    }
    return result;
}

int main(void)
{
    printf("---max1 for a---\n");
    printf("%d\n", max_all(30, 20, 10));
    printf("%d\n", max_all(30, 10, 20));
    printf("%d\n", max_all(30, 15, 15));
    printf("%d\n", max_all(30, 30, 5));
    printf("%d\n", max_all(30, 5, 30));
    printf("%d\n", max_all(30, 30, 30));
    printf("---max1 for b---\n");
    printf("%d\n", max_all(20, 30, 10));
    printf("%d\n", max_all(10, 30, 20));
    printf("%d\n", max_all(15, 30, 15));
    printf("%d\n", max_all(30, 30, 5));
    printf("%d\n", max_all(5, 30, 30));
    printf("%d\n", max_all(30, 30, 30));
    printf("---max1 for c---\n");
    printf("%d\n", max_all(20, 10, 30));
    printf("%d\n", max_all(10, 20, 30));
    printf("%d\n", max_all(15, 15, 30));
    printf("%d\n", max_all(30, 5, 30));
    printf("%d\n", max_all(5, 30, 30));
    printf("%d\n", max_all(30, 30, 30));

    return 0;
}
```

課題 9-2 のプログラム例

```c
#include <stdio.h>

int max2(int a, int b, int c)
{
    int result = a;
    if(result < b) result = b;
    if(result < c) result = c;
    return result;
}

int main(void)
{
    printf("---max2 for a---\n");
    printf("%d\n", max2(30, 20, 10));
    printf("%d\n", max2(30, 10, 20));
    printf("%d\n", max2(30, 15, 15));
    printf("%d\n", max2(30, 30, 5));
    printf("%d\n", max2(30, 5, 30));
    printf("%d\n", max2(30, 30, 30));
```

```
    printf("---max2 for b---\n");
    printf("%d\n", max2(20, 30, 10));
    printf("%d\n", max2(10, 30, 20));
    printf("%d\n", max2(15, 30, 15));
    printf("%d\n", max2(30, 30, 5));
    printf("%d\n", max2(5, 30, 30));
    printf("%d\n", max2(30, 30, 30));
    printf("---max2 for c---\n");
    printf("%d\n", max2(20, 10, 30));
    printf("%d\n", max2(10, 20, 30));
    printf("%d\n", max2(15, 15, 30));
    printf("%d\n", max2(30, 5, 30));
    printf("%d\n", max2(5, 30, 30));
    printf("%d\n", max2(30, 30, 30));

    return 0;
}
```

課題 9-3 のプログラム例

```
#include <stdio.h>

#define N 100
int isprime(int num);

int isprime(int num)
{
    int i;
    for(i=2; i<num; i++) {
        if(num % i == 0) break;
    }
    if(i == num) {
        return num;
    } else {
        return 0;
    }
}

int main(void)
{
    int i;
    for(i=2; i<=N; i++) {
        printf("%d, ", isprime(i));
    }
    printf("\n");

    return 0;
}
```

課題 9-4 のプログラム例

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

#define N 100
void prime2(int *a, int num);

void prime2(int *a, int num)
{
    int i, j;
    double goal;
    for(i=0; i<=num; i++) {
        a[i] = i;
    }
    goal = sqrt(num);
    for(i=2; i<goal; i++) {
        for(j=2; i*j<=num; j++) {
            a[j*i] = 0;
        }
    }
}

int main(void)
{
    int i;
    int a[N];
    prime2(a, N);
    for(i=2; i<=N; i++) {
        printf("%d, ", a[i]);
    }
    printf("\n");

    return 0;
}
```