\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

Report: HW5\_1

Author: F74086381 蘇恩質 <grgy078033@gmail.com>

Class: 112資訊系 (乙班)

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*Code:

#include <stdio.h>

int f\_a(int i)

{

if(i < 3) return i;

return f\_a(i - 1) + f\_a(i - 2) + f\_a(i - 3);

}

int f\_b(int i)

{

int n = 2;

int arr[100] = {0, 1, 2};

if (i <= n) return i;

for(int j = n + 1; j <= i; j++)

{

arr[j] = arr[j - 1] + arr[j - 2] + arr[j - 3];

n++;

}

return arr[i];

}

int f\_c(int i)

{

static int n = 2;

static int arr[100] = {0, 1, 2};

if(i <= n) return arr[i];

arr[i] = f\_c(i - 1) + f\_c(i - 2) + f\_c(i - 3);

n++;

return arr[i];

}

int main()

{

printf("%d\n", f\_a(5));

printf("%d\n", f\_b(5));

printf("%d\n", f\_c(5));

return 0;

}

Compilation:

gcc -o hw5\_1 hw5\_1.c

Execution:

./hw5\_1

Output:

11

11

11

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

Report: HW5\_2

Author: F74086381 蘇恩質 <grgy078033@gmail.com>

Class: 112資訊系 (乙班)

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*Code:

#include <stdio.h>

int I[][2] = {{3, 19}, {11, 33}, {18, 80}, {80, 100}};

int n1 = (sizeof(I)/sizeof(I[0][0])) / 2;

int n2 = (sizeof(I)/sizeof(I[0][0]));

void Range(int I[][2], int v, int R[][2]);

void T\_Set(int I[][2], int T[]);

int main()

{

int R[n1][2], T[n2];

Range(I, 18, R);

printf("\n");

T\_Set(I, T);

printf("\n");

return 0;

}

void Range(int I[][2], int v, int R[][2])

{

int i, N = 0;

for(i = 0; i < n1; i++)

if(v >= I[i][0] && v <= I[i][1])

{

R[N][0] = I[i][0];

R[N][1] = I[i][1];

N++;

}

printf("{");

for(i = 0; i < N; i++)

{

if(i < N - 1)

printf("[%d,%d],", R[i][0], R[i][1]);

else

printf("[%d,%d]", R[i][0], R[i][1]);

}

printf("}");

}

void T\_Set(int I[][2], int T[])

{

int i, j, temp;

for(i = 0, j = 0; i < n2; i = i + 2, j++)

{

T[i] = I[j][0] - 1;

T[i + 1] = I[j][1];

}

for(i = n2 - 1; i > 0; i--)

{

for(j = 0; j <= i - 1; j++)

{

if(T[j] > T[j + 1])

{

temp = T[j];

T[j] = T[j + 1];

T[j + 1] = temp;

}

}

}

printf("{");

for(i = 0; i < n2; i++)

{

printf("%d", T[i]);

if(i < n2 - 1)

printf(",");

}

printf("}");

}

Compilation:

gcc -o hw5\_2 hw5\_2.c

^

Execution:

./hw5\_2

Output:

{[3,19],[11,33],[18,80]}

{2,10,17,19,33,79,80,100}

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

Report: HW5\_3

Author: F74086381 蘇恩質 <grgy078033@gmail.com>

Class: 112資訊系 (乙班)

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*Code:

#include <stdio.h>

#define SIZE 31

int a[SIZE] ={15, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15};

void mirror\_iterative(int a[]);

void mirror\_recursive(int root\_index, int a[], int n);

void ReverseArray(int arr[], int start, int end);

int main()

{

int i;

for(i = 1; i <= a[0]; i++)

{

if(i == a[0])

printf("%d", a[i]);

else

printf("%d,", a[i]);

}

printf("\n");

mirror\_recursive(1, a, a[0]);

for(i = 1; i <= a[0]; i++)

{

if(i == a[0])

printf("%d", a[i]);

else

printf("%d,", a[i]);

}

printf("\n\n");

mirror\_recursive(1, a, a[0]);

for(i = 1; i <= a[0]; i++)

{

if(i == a[0])

printf("%d", a[i]);

else

printf("%d,", a[i]);

}

printf("\n");

mirror\_iterative(a);

for(i = 1; i <= a[0]; i++)

{

if(i == a[0])

printf("%d", a[i]);

else

printf("%d,", a[i]);

}

printf("\n");

return 0;

}

void ReverseArray(int arr[], int start, int end)

{

int temp;

while (start < end)

{

temp = arr[start];

arr[start] = arr[end];

arr[end] = temp;

start++;

end--;

}

}

void mirror\_recursive(int root\_index, int a[], int n)

{

int i, j;

int b[SIZE];

if(root\_index \* 2 > a[0])

return;

for(i = 1; i < SIZE; i++)

{

if(root\_index \* (1 << i) > a[0])

break;

for(j = 0; j < (1 << i) / 2; j++)

{

b[j] = a[(1 << i) \* root\_index + j];

a[(1 << i) \* root\_index + j] = a[(1 << i) \* root\_index + (1 << i) / 2 + j];

a[(1 << i) \* root\_index + (1 << i) / 2 + j] = b[j];

}

}

mirror\_recursive(2 \* root\_index, a, a[0]);

mirror\_recursive(2 \* root\_index + 1, a, a[0]);

}

void mirror\_iterative(int a[])

{

int i, start, end;

for(i = 1; i < a[0]; i = i \* 2)

{

start = i;

end = i \* 2 - 1;

ReverseArray(a, start, end);

}

}

Compilation:

gcc -o hw5\_3 hw5\_3.c

^

Execution:

./hw5\_3

Output:

1,2,3,4,5,6,7,8,9,10,11,12,13,14,15

1,3,2,7,6,5,4,15,14,13,12,11,10,9,8

1,2,3,4,5,6,7,8,9,10,11,12,13,14,15

1,3,2,7,6,5,4,15,14,13,12,11,10,9,8

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

Report: HW5\_4

Author: F74086381 蘇恩質 <grgy078033@gmail.com>

Class: 112資訊系 (乙班)

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*Code:

#include <stdio.h>

void PrintBit(int a, int b, int c, int d)

{

unsigned n, n1;

int i;

n1 = (((n << 8 | a) << 8 | b) << 8 | c) << 8 | d;

unsigned ip = \*(int\*)&n1;

unsigned mask = 0x80000000;

for(i = 0; i < 32; i++)

{

if(i == 8 || i == 16 || i == 24)

printf(" ");

printf("%d", ((ip&mask)>>(31 - i)));

mask >>= 1;

}

}

void PrintIP(char n[])

{

int i;

unsigned mask = 0xff;

unsigned n1 = 0;

for(i = 0; i <= 31; i++)

{

if(n[i] == '0')

n1 = (n1 | 0);

if(n[i] == '1')

n1 = (n1 | 1);

if(i == 31)

break;

n1 <<= 1;

}

unsigned a = (n1 >> 24) & mask;

unsigned b = (n1 >> 16) & mask;

unsigned c = (n1 >> 8) & mask;

unsigned d = n1 & mask;

printf("%d.", a);

printf("%d.", b);

printf("%d.", c);

printf("%d\n", d);

}

int main()

{

PrintBit(129, 160, 96, 1);

printf("\n");

char n[] = "10000001101000000110000000000001";

PrintIP(n);

return 0;

}

Compilation:

gcc -o hw5\_4 hw5\_4.c

^

Execution:

./hw5\_4

Output:

10000001 10100000 01100000 00000001

129.160.96.1

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

Report: HW5\_5

Author: F74086381 蘇恩質 <grgy078033@gmail.com>

Class: 112資訊系 (乙班)

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*Code:

#include <stdio.h>

#define N 4

#define P 3

int \*a[P];

int boolfunc(int \*var, int m);

int recursivebool(int \*var, int n);

void combinations(int A[], int n, int k);

int main()

{

int A[] = {4, 1, 2, 3, 4};

int varbool[20];

recursivebool(varbool, N);

combinations(A, 5, 3);

return 0;

}

int boolfunc(int \*var, int m)

{

int result=var[0], i;

for(i=1; i<m; i++)

result = (result && var[i]);

return result;

}

int recursivebool(int \*var, int n)

{

int localvar[20], i, j;

if(n == 0)

{

for(i=0; i<N; i++) printf("%d ", var[i]);

printf("%d\n", boolfunc(var, N));

return 1;

}

for(j=0; j<=1; j++)

{

var[n-1] = j;

recursivebool(var, n - 1);

}

}

void combinations(int A[], int n, int k)

{

int i, j, m = 123;

if(k == 0)

{

for(i = P; i >= 2; i--)

if(a[i - 1] <= a[i - 2] || \*a[i - 1] <= \*a[i - 2]) m = 0;

if(m == 123)

{

for(i = 0; i < P; i++)

printf("%d ", \*a[i]);

printf("\n");

}

return;

}

for(j = 0; j < n; j++)

{

a[k - 1] = &A[j];

combinations(A, n, k - 1);

}

return;

}

Compilation:

gcc -o hw5\_5 hw5\_5.c

^

Execution:

./hw5\_5

Output:

0 0 0 0 0

1 0 0 0 0

0 1 0 0 0

1 1 0 0 0

0 0 1 0 0

1 0 1 0 0

0 1 1 0 0

1 1 1 0 0

0 0 0 1 0

1 0 0 1 0

0 1 0 1 0

1 1 0 1 0

0 0 1 1 0

1 0 1 1 0

0 1 1 1 0

1 1 1 1 1

1 2 3

1 2 4

1 3 4

2 3 4

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

Report: HW5\_6

Author: F74086381 蘇恩質 <grgy078033@gmail.com>

Class: 112資訊系 (乙班)

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*Code:

#include <stdio.h>

int determinant(int f[][10], int x)

{

int pr = 1, c[10], d = 0, b[10][10], j, p, q, t;

if(x == 2) return(f[1][1] \* f[2][2] - f[1][2] \* f[2][1]);

for(j = 1; j <= x; j++){

int r = 1, s = 1;

for(p = 1; p <= x; p++){

for(q = 1; q <= x; q++){

if(p != 1 && q != j){

b[r][s] = f[p][q];

s++;

if(s > x - 1){r++; s = 1;}

}

}

}

pr = j % 2? 1 : -1;

c[j] = pr \* determinant(b , x - 1);

}

for(j = 1, d = 0; j <= x; j++) d += (f[1][j] \* c[j]);

return(d);

}

int main()

{

int a[][10] = {{0, 0, 0, 0, 0, 0, 0, 0, 0, 0},

{0, 1, 2, 2, 0, 0, 0, 0, 0, 0},

{0, 3, 2, 2, 0, 0, 0, 0, 0, 0},

{0, 5, 6, 8, 0, 0, 0, 0, 0, 0},

{0, 0, 0, 0, 0, 0, 0, 0, 0, 0},

{0, 0, 0, 0, 0, 0, 0, 0, 0, 0},

{0, 0, 0, 0, 0, 0, 0, 0, 0, 0},

{0, 0, 0, 0, 0, 0, 0, 0, 0, 0},

{0, 0, 0, 0, 0, 0, 0, 0, 0, 0},

{0, 0, 0, 0, 0, 0, 0, 0, 0, 0},};

int x = determinant(a, 3);

printf("%d\n", x);

return 0;

}

Compilation:

gcc -o hw5\_6 hw5\_6.c

^

Execution:

./hw5\_6

Output:

-8