Homework 9

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Exercise 1

在 Homework8 (1) 中汇编代码上进行基本块划分，构建流图。

解 由以下汇编代码，划分基本块，给出如下流图：

```
.text
.globl  test
    .type   test, @function
test:
    pushl   %ebp
    movl    %esp, %ebp
    subl    $16, %esp
    movl    8(%ebp), %eax
    cmpl    12(%ebp), %eax
    jle     .L4
    cmpl    $0, 12(%ebp)
    je      .L4
    cmpl    $10, 12(%ebp)
    jle     .L4
    cmpl    $0, 8(%ebp)
    je      .L4
    cmpl    $20, 8(%ebp)
    jg      .L3
.L4:
    cmpl    $100, 8(%ebp)
    jg      .L3
    cmpl    $99, 12(%ebp)
    jle     .L2
    cmpl    $40, 8(%ebp)
    jg      .L2
    cmpl    $20, 12(%ebp)
    jle     .L3
    cmpl    $-10, 8(%ebp)
    jge     .L3
    jmp     .L2
.L3:
    movl    $100, -4(%ebp)
    jmp     .L5
.L2:
    movl    $60, -4(%ebp)
.L5:
    movl    -4(%ebp), %eax
    leave
    ret
```

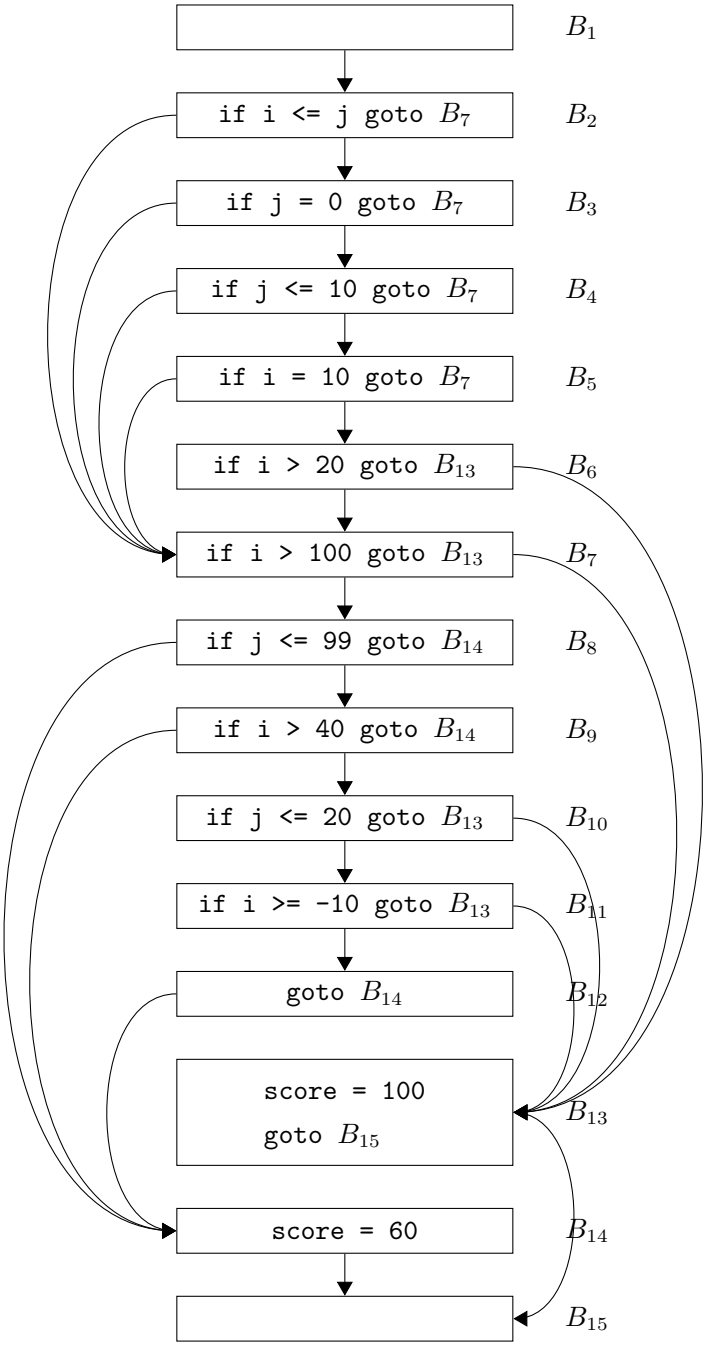

图 1: Homework8 (1) 代码对应流图

Exercise 2

给出 Homework1 (2) 中 C 程序相应的三地址中间代码，并构建流图。

解 由以下 C 语言代码

```
int main()
{
    int i, j = 0;
    for(i = 0; i < 10; i++)
    {
        switch(i)
        {
            case 0: case 2: break;
            case 3: case 5: continue;
            default: j = i;
        }
        L: j += i * 2;
    }
}
```

首先给出三地址中间代码结构

```
    j = 0
    i = 0
L1: if i < 10 goto L2
    goto Lnext
L2: t = i
    goto test
L3: goto Lnext
L4: goto L5
test:
    if t == 0 goto L3
    if t == 2 goto L3
    if t == 3 goto L4
    if t == 5 goto L4
    j = i
    p = i * 2
    j = j + p
L5: i = i + 1
    goto L1
Lnext:
```

据此构建流图

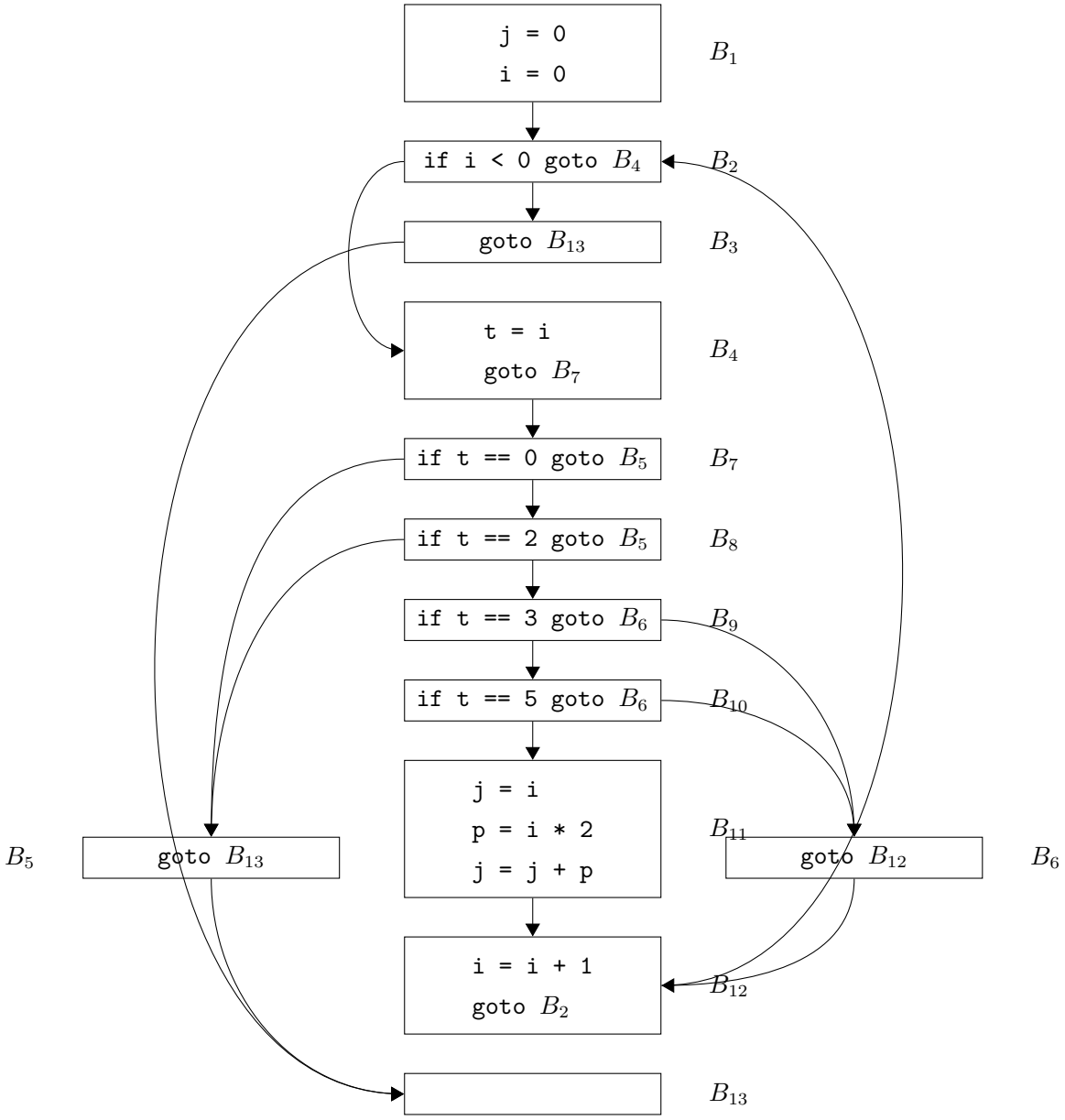

图 2: Homework1 (2) 代码对应流图