**Q.1. (a) Write a program in assembly language to find L.C.M of two single-digit numbers.**

**CODE:**

**.model small**

**.stack 100h**

**.data**

**num1 db 8**

**num2 db 17**

**gcd\_res db 0**

**lcm\_res dw 0**

**msg db 'LCM is: $'**

**.code**

**main:**

**mov ax, @data**

**mov ds, ax**

**mov al, num1**

**mov bl, num2**

**call gcd**

**mov gcd\_res, al**

**mov al, num1**

**mov ah, 0**

**mov dl, num2**

**mul dl**

**mov cl, gcd\_res**

**div cl**

**mov lcm\_res, ax**

**mov ah, 09h**

**lea dx, msg**

**int 21h**

**mov ax, lcm\_res**

**call print\_num**

**mov ah, 4Ch**

**int 21h**

**gcd proc**

**cmp bl, 0**

**je end\_gcd**

**gcd\_loop:**

**mov ah, 0**

**div bl**

**mov al, bl**

**mov bl, ah**

**cmp bl, 0**

**jne gcd\_loop**

**end\_gcd:**

**ret**

**gcd endp**

**print\_num proc**

**mov cx, 0**

**mov bx, 10**

**convert\_loop:**

**xor dx, dx**

**div bx**

**push dx**

**inc cx**

**cmp ax, 0**

**jne convert\_loop**

**print\_digits:**

**pop dx**

**add dl, '0'**

**mov ah, 02h**

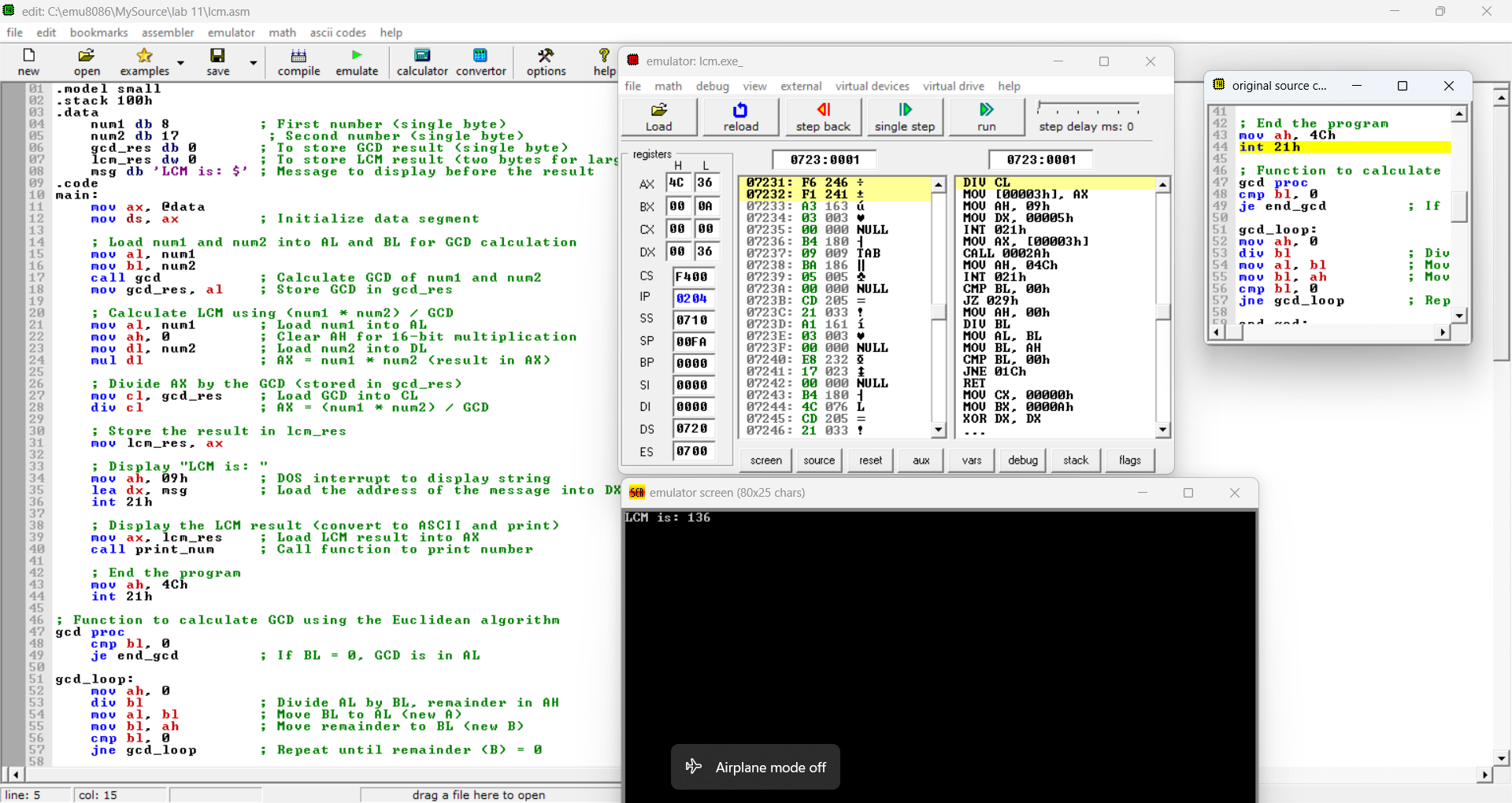
**int 21h**

**loop print\_digits**

**ret**

**print\_num endp**

**end main**

**Output:  
  
**

**Q 1. (b) Write an assembly language program to display the nth term of a fibonacci series. “n” must be a single digit number which may be taken from the user.**

**CODE:**

**.model small**

**.stack 100h**

**.data**

**prompt db 'Enter a single digit number (0-9) for n: $'**

**result\_msg db 0Dh,0Ah,'The nth Fibonacci number is: $'**

**fib dw 0**

**.code**

**main proc**

**mov ax, @data**

**mov ds, ax**

**mov ah, 09h**

**lea dx, prompt**

**int 21h**

**mov ah, 01h**

**int 21h**

**sub al, '0'**

**mov cl, al**

**cmp cl, 1**

**jbe single\_digit\_fib**

**mov ax, 0**

**mov bx, 1**

**fib\_loop:**

**dec cl**

**jz store\_result**

**add ax, bx**

**xchg ax, bx**

**jmp fib\_loop**

**store\_result:**

**mov fib, ax**

**single\_digit\_fib:**

**cmp cl, 0**

**je show\_fib0**

**mov fib, bx**

**jmp display\_result**

**show\_fib0:**

**mov fib, ax**

**display\_result:**

**mov ah, 09h**

**lea dx, result\_msg**

**int 21h**

**mov ax, fib**

**call print\_number**

**mov ah, 4Ch**

**int 21h**

**main endp**

**print\_number proc**

**mov cx, 10**

**mov bx, 0**

**reverse\_digits:**

**xor dx, dx**

**div cx**

**push dx**

**inc bx**

**test ax, ax**

**jnz reverse\_digits**

**display\_digits:**

**pop dx**

**add dl, '0'**

**mov ah, 02h**

**int 21h**

**dec bx**

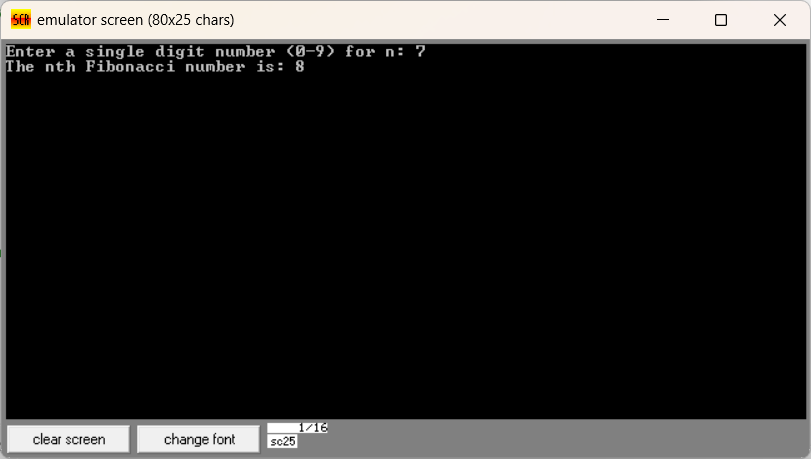
**jnz display\_digits**

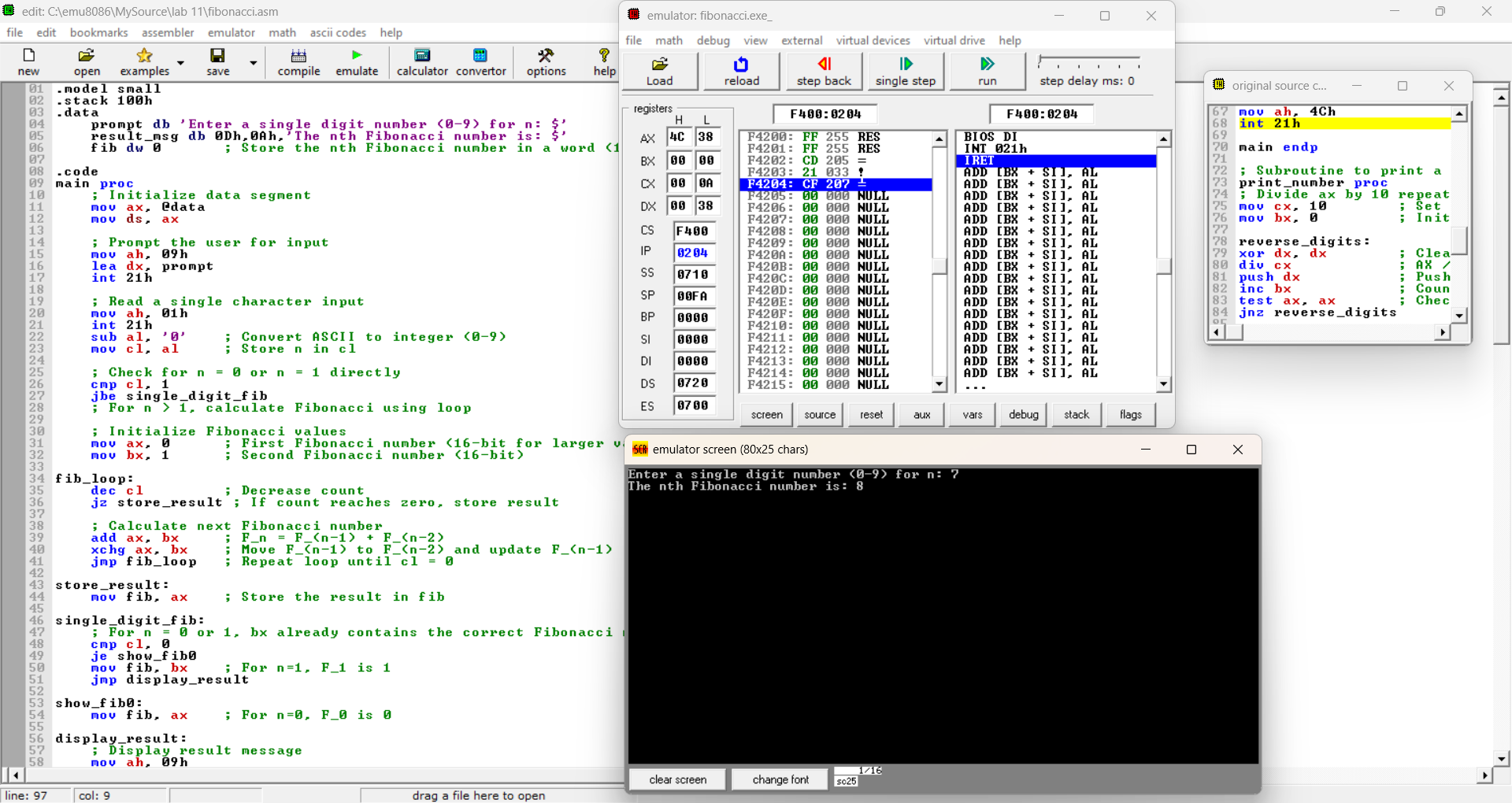
**ret**

**print\_number endp**

**end main**

**Output:**

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**Q 2. Write an assembly language program to find the factorial of a given single-digit number.**

**CODE:**

**.model small**

**.stack 100h**

**.data**

**prompt db 'Enter a single digit number (0-9): $'**

**result\_msg db 0Dh,0Ah,'The factorial is: $'**

**factorial dw 1**

**.code**

**main proc**

**mov ax, @data**

**mov ds, ax**

**mov ah, 09h**

**lea dx, prompt**

**int 21h**

**mov ah, 01h**

**int 21h**

**sub al, '0'**

**mov bl, al**

**cmp bl, 0**

**jne calculate\_factorial**

**mov factorial, 1**

**jmp display\_result**

**calculate\_factorial:**

**mov cx, bx**

**mov ax, 1**

**factorial\_loop:**

**mul cx**

**loop factorial\_loop**

**mov factorial, ax**

**display\_result:**

**mov ah, 09h**

**lea dx, result\_msg**

**int 21h**

**mov ax, factorial**

**call print\_number**

**mov ah, 4Ch**

**int 21h**

**main endp**

**print\_number proc**

**mov cx, 10**

**mov bx, 0**

**reverse\_digits:**

**xor dx, dx**

**div cx**

**push dx**

**inc bx**

**test ax, ax**

**jnz reverse\_digits**

**display\_digits:**

**pop dx**

**add dl, '0'**

**mov ah, 02h**

**int 21h**

**dec bx**

**jnz display\_digits**

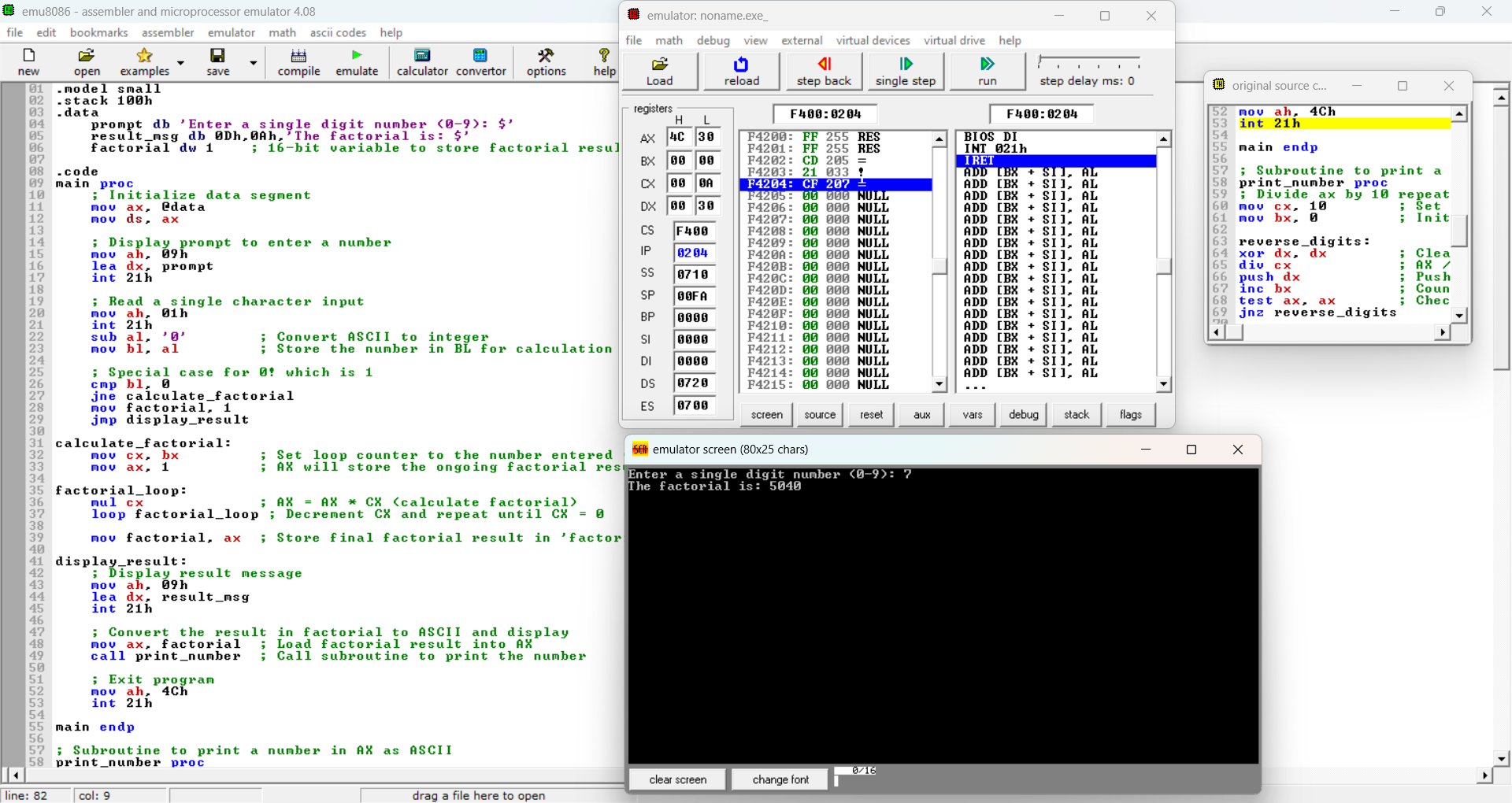
**ret**

**print\_number endp**

**end main**

**Output:**

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**Git hub Repository link:**

[**https://github.com/SruthiVihitha/COA-Lab\_task-11.git**](https://github.com/SruthiVihitha/COA-Lab_task-11.git)