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# 1st Team Project

Computer Systems

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- Open the code
- Compile the code
- Run the executable
- Compare the result of original source code

# Open the code

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```
C count1.c > main()
1  #include <stdio.h>
2
3  int main()
4  {
5      int i;
6      for(i=1; i<10000; i++)
7      {
8          printf("%d,", i);
9      }
10
11 }
```



```
C count2.c > main(i)
1  main(i){i<1e4&&printf("%d,",i)+main(++i);}

```

- ① Use recursion instead of loops
- ② No explicit *int i* declaration
- ③ No explicit return type
- ④ Use 1e4 to represent 10,000

## Compile the code

---

```
$ gcc -o count2 count2.c -std=c90
count2.c: In function 'main':
count2.c:1:16: warning: incompatible implicit declaration of built-in function 'printf'
  main(i){i<1e4&&printf("%d,",i)+main(++i);}
                   ^~~~~~
count2.c:1:16: note: include '<stdio.h>' or provide a declaration of 'printf'
```

Warning occurred because we did not include the `<stdio.h>`

# Run the executable

---

```
$ ./count2
1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35,36,
37,38,39,40,41,42,43,44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,60,61,62,63,64,65,66,67,68,69,
70,71,72,73,74,75,76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91,92,93,94,95,96,97,98,99,100,101,1
02,103,104,105,106,107,108,109,110,111,112,113,114,115,116,117,118,119,120,121,122,123,124,125,126,
127,128,129,130,131,132,133,134,135,136,137,138,139,140,141,142,143,144,145,146,147,148,149,150,151
,152,153,154,155,156,157,158,159,160,161,162,163,164,165,166,167,168,169,170,171,172,173,174,175,17
6,177,178,179,180,181,182,183,184,185,186,187,188,189,190,191,192,193,194,195,196,197,198,199,200,2
01,202,203,204,205,206,207,208,209,210,211,212,213,214,215,216,217,218,219,220,221,222,223,224,225,
226,227,228,229,230,231,232,233,234,235,236,237,238,239,240,241,242,243,244,245,246,247,248,249,250
```

⋮

```
,9885,9886,9887,9888,9889,9890,9891,9892,9893,9894,9895,9896,9897,9898,9899,9900,9901,9902,9903,990
4,9905,9906,9907,9908,9909,9910,9911,9912,9913,9914,9915,9916,9917,9918,9919,9920,9921,9922,9923,99
24,9925,9926,9927,9928,9929,9930,9931,9932,9933,9934,9935,9936,9937,9938,9939,9940,9941,9942,9943,9
944,9945,9946,9947,9948,9949,9950,9951,9952,9953,9954,9955,9956,9957,9958,9959,9960,9961,9962,9963,
9964,9965,9966,9967,9968,9969,9970,9971,9972,9973,9974,9975,9976,9977,9978,9979,9980,9981,9982,9983
,9984,9985,9986,9987,9988,9989,9990,9991,9992,9993,9994,9995,9996,9997,9998,9999,
```

Successfully compiled and run

## Compare the results

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```
$ ./count1 > c1 && ./count2 > c2
```

-> Redirected outputs into c1, c2

```
$ diff c1 c2
```

-> diff is a command that compares two files and shows their differences

-> There's no differences

**Total code size :**

```
$ wc -c count2.c  
42 count2.c
```

**Thank you**

