

問題：利用單位圓內接正 N 邊形逼近 π 。

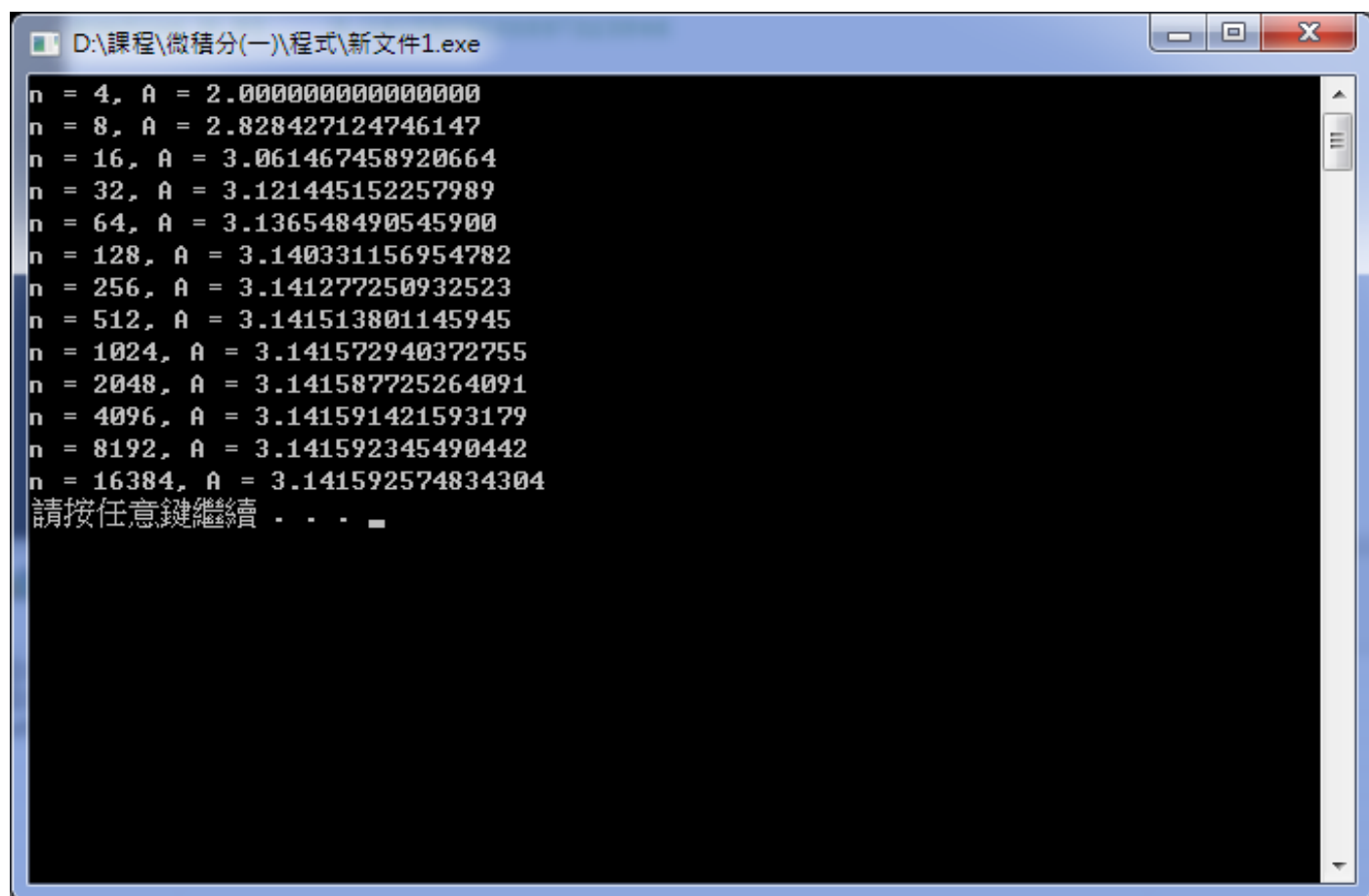
一. 程式碼：

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

#define M_PI    3.1415926535897323846

int main()
{
    double getSide(int n)
    {
        double cos_n = cos(((360.0/ (double)n ) / 180.0)*M_PI);
        return sqrt(-2.0 * cos_n + 2);
    }
    double recursive(int n)
    {
        if (n > 12)
            return 0;
        double split_n = 4 * pow(2, n);
        double side = getSide(split_n);
        printf("n = %.0lf, A = %.15lf\n",split_n, split_n /4.0 * side * side * (1.0/
tan(M_PI/(double)split_n)));
        recursive(n+1);
    }
    recursive(0);
    system("pause");
}
```

二. 執行結果:



```
D:\課程\微積分(-)\程式\新文件1.exe
n = 4, A = 2.0000000000000000
n = 8, A = 2.828427124746147
n = 16, A = 3.061467458920664
n = 32, A = 3.121445152257989
n = 64, A = 3.136548490545900
n = 128, A = 3.140331156954782
n = 256, A = 3.141277250932523
n = 512, A = 3.141513801145945
n = 1024, A = 3.141572940372755
n = 2048, A = 3.141587725264091
n = 4096, A = 3.141591421593179
n = 8192, A = 3.141592345490442
n = 16384, A = 3.141592574834304
請按任意鍵繼續 . . . ■
```