

**Engr 123
Assignment 2**

**Assigned: January 18, 2017
Due: January 30, 2017**

Reminder: This is a programming project, and work on this assignment should be done individually. Assistance from other students is limited to questions about specific issues as noted in the syllabus.

The English mathematician, John Wallis (1616-1703) discovered the following infinite product involving π :

$$\pi = 2 \left[\frac{2}{1} \cdot \frac{2}{3} \cdot \frac{4}{3} \cdot \frac{4}{5} \cdot \frac{6}{5} \cdot \frac{6}{7} \cdot \frac{8}{7} \cdots \right]$$

Write a program in C# to prompt the user to enter the number of terms that this equation should be evaluated to. Calculate and print the value of the equation to that number of terms. Compare the approximation to the value of pi using

$$\pi = 3.14159265358979323846.$$

After printing your result continue prompting the user for more input until the user enters a zero for the number of terms.

Here is a typical output screen.

```
This program calculates the value of pi based on an infinite series.  
by John Wallis in the 17th century.
```

```
Enter the number of terms to used...3  
Using 3 the approximation to pi is 3.55555555555556  
The error is approximately -0.413962901965762
```

```
Enter the number of terms to used...15  
Using 15 the approximation to pi is 3.24125187080898  
The error is approximately -0.0996592172191861
```

```
Enter the number of terms to used...50  
Using 50 the approximation to pi is 3.1109451669015  
The error is approximately 0.0306474866882969
```

```
Enter the number of terms to used...500  
Using 500 the approximation to pi is 3.1384588976716  
The error is approximately 0.00313375591819165
```

```
Enter the number of terms to used...0  
Press any key to continue
```

After you get your program running correctly, right click on the *project folder* and choose Send To → Compressed zip file. Rename the compressed zip file as Asn02XXX.zip where XXX are you three initials. Upload the renamed file to [\\cecsfp01\users\everyone\enr123](https://cecsfp01\users\everyone\enr123).