

CS110: Computer Programming Lab

Department of CSE

IIT, Guwahati

Module 02 Stage 03 Exercise 06

Problem description

Use `for (i=20001; i<100003; i=i+98)` to generate many different values of `i`. For each value of `i`, compute the value of π using the the continous fraction below by dropping the fraction $(i+2)^2/2+ \dots$ at the bottom.

- William Brouncker (ca. 1660's) rewrote Wallis' formula as a continued fraction, which Wallis and later Euler (1775) proved to be equivalent. It is unknown how Brouncker himself came up with the continued fraction.

$$\frac{4}{\pi} = 1 + \frac{1^2}{2 + \frac{3^2}{2 + \frac{5^2}{2 + \frac{7^2}{2 + \dots}}}}$$

Output values will show pattern where alternate values will be closer to each other. This affiliation between the alternate values is avoided if increment used is 100 instead of 98! Think why this is so?