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/*
  File: arc_length.cpp
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  Synopsis: This program reads in polar coordinate and calculate the
arclength.
*/

#include <iostream>
#include <cmath>

using namespace std;

// FUNCTION PROTOTYPE FOR degrees2radians
// Parameter D is degree.
double degrees2radians(double D);

// FUNCTION PROTOTYPE FOR compute_arc_length
/* There are 2 paremeter in this function prototype,
   R the radius and O the angle in radian */
double compute_arc_length(double R, double O);

int main()
{
  // Declare and initialize your variables
  double radius, angle_degrees(0.0), angle_radians(0.0), arc_length;

  // Read in polar coordinates
  cout << "Enter radius: ";
  cin >> radius;

  cout << "Enter polar angle (degrees): ";
  cin >> angle_degrees;

  // Convert degrees to radians
  angle_radians = degrees2radians(angle_degrees);

  // Compute arc length
  arc_length = compute_arc_length(radius, angle_radians);

  // Output arc length
  cout << "The arc length is " << arc_length << endl;

  return 0;
}

// DEFINE FUNCTION degrees2radians here:
double degrees2radians(double D){

  double R; //R is radian.

  R = D * M_PI / 180;

  return R;
```

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}

// DEFINE FUNCTION compute_arc_length here:
double compute_arc_length(double R, double O){

  double A; //A is the Arc length.

  A = R * O;

  return A;

}
```