```c
/************************************************
* HeeChan Kang
* CSC 431 - AI Robotics
* Assignment One – Inverse Kinematics
************************************************/

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

void main() {
	double x, y, alpha;
	double base = 1.0, l1 = 0.8;

	/* Take user input for x and y coordinates. */
	printf("Enter x-coordinate: ");
	scanf("%lf", &x);
	printf("Enter y-coordinate: ");
	scanf("%lf", &y);

	/* Inverse Kinematics equation derived in class */
	alpha = M_PI - acos((pow(x,2) + pow(y,2) - pow(l1,2) – pow(base,2))/
		(-2*l1*base));

	if (x > 0.0)
		alpha = -alpha;

	printf("Current angle alpha is: %6.4lf.\n", alpha);
}
```

```
heechan@heech-laptop:~/Documents/Git/airobotics/ArmLocalization$ gcc inverseArm.c -o inverseArm -lm
heechan@heech-laptop:~/Documents/Git/airobotics/ArmLocalization$ ./inverseArm
Enter x-coordinate: 0.67
Enter y-coordinate: 1.4322
Current angle alpha is: -1.0033.
heechan@heech-laptop:~/Documents/Git/airobotics/ArmLocalization$ ./inverseArm
Enter x-coordinate: -.67
Enter y-coordinate: 1.4322
Current angle alpha is: 1.0033.
heechan@heech-laptop:~/Documents/Git/airobotics/ArmLocalization$ ./inverseArm
Enter x-coordinate: 0
Enter y-coordinate: 1.8
Current angle alpha is: 0.0000.
heechan@heech-laptop:~/Documents/Git/airobotics/ArmLocalization$
```