COS120 C++ Programming

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| Homework 3 | **Selections and Loops** |

**Task 1. (Decisions)** Write a program that requests the user to enter coordinates of three 2D points A, B and C of a triangle with sides a. b, c and computes and displays the triangle angles in degrees. The formulas to compute angles A, B and C are as follows:

Angle A = arccos( (a\*a – b\*b – c\*c) / (–2 \* b \* c ) )

Angle B = arccos( (b\*b – a\*a – c\*c) / (–2 \* a \* c ) )

Angle C = arccos( (c\*c – b\*b – a\*a) / (–2 \* a \* b ) )

The formulas to compute sides a, b and c are as follows:

Side a =

Side b =

Side c =

You should design your own functions to compute and return the triangle sides and the triangle angles.

In order to compose secure and reliable program you must insert decision/selection if statements for data validation to test the computed values as valid sides of a realistic triangle. This will help you to avoid undesired side effects as run time errors.

**Task 2. (Repetition).** Use a for loop to Write a program to find the largest integer n such that n3 / pow(n,3) or n\*n\*n/ is less than 12000. Use a do….while loop to Write a program to find the smallest integer n such that n2 / pow(n,2) or n\*n/ is greater than 12000.

**Deadline**

**The homework is due by Monday, Oct 12, 2015, 23:59:00 - to be uploaded in Blackboard system, COS120 class.**

Late work will be penalized. Max period for late work to be accepted is five days.

**Instructions for report preparation:**

**All of the following deliverables must be uploaded in Blackboard system as a single MS Word document including header page and sections to follow SDM**. **You should use the same Word file to include the solutions of both tasks.**

1. A header page with your name, course title and task. See template:

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| COS120 C++ Programming Student: Ivan Petrov Homework No 03  Task: The text of the task to be displayed here |

1. A Second page which must also specify if you have completed successfully the assignment. If you have not completed the assignment, you must say so and explain, e.g. code will not compile, program does not work correctly, etc.
2. You need to include on separate sections the following information according Software Development Method:
3. Analyses and Design **(10% of grade)**.
4. Implementation **(70% of grade)**. Source Code and Comments. A C++ source listing of your program. Make sure that you comment your code with meaningful comments.
5. Testing **(20% of grade)**. Evidence of working program. Screen shots of your program running with annotations which explain what it is doing. You must have enough screenshots to demonstrate that your program works.