

Assignment#3

Course Code: CIT 102

Course Title: Structured Programming Language

Last date of submission: 30.03.16

Draw the respective flowchart and then write an efficient C program for solving each of the following problems (1-33) obeying the general guidelines given below (i-iii):

- i. Show user-friendly messages to make the program interactive
 - ii. Use symbolic constant as per your requirement
 - iii. Try to avoid static initializations
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1. Take a pair of numbers for each data type such as *int/signed int, unsigned int, short int/signed short int, long int/unsigned long int, float, double, long double* etc. Then perform the addition, subtraction, multiplication, division and modulation (if possible).
 2. Take a number denoting the price of a product in Poisa (100 Poisa=1 Taka). Now, show the equivalent price in Taka.
 3. Take a number denoting the price of a product in Taka (1 Taka=100 Poisa). Now, show the equivalent price in Poisa.
 4. Take a number denoting the height of an object in inch. Now, show the equivalent height in feet.
 5. Perform the appropriate conversions among millimeter, centimeter, meter, and kilometer. [Take inputs as per your requirement.]
 6. Perform the appropriate conversions among second, minute, day, month and year. [Take inputs as per your requirement.]
 7. Perform the appropriate conversions among milligram, gram and kilogram. [Take inputs as per your requirement.]
 8. Perform the appropriate conversions among bit, byte, kilobyte, megabyte and terabyte. [Take inputs as per your requirement.]

9. Input an integer number to consider it as the number of days. Calculate the number of year(s), month(s), and remaining days from the taken days and then print the results with appropriate messages. [For example, if the entered number is 400. Considering the number as 400 days, we have 1 year, 1 month and 5 remaining days.]
10. Take a number from keyboard and check whether it is odd or even. If the number is even, show a message “The number x is even.”, “The number x is odd.”, otherwise. Here, x is the entered number.
11. Input two numbers from keyboard. Show the largest number with an appropriate message.
12. Take the heights (in meter) of two persons. Then find the taller person and print a message mentioning the result.
13. Take a pair of numbers denoting the coordinate of a point in Cartesian system. Now convert and show the point into polar system.
14. Take a pair of numbers denoting the coordinate of a point in polar system. Now convert and show the point into Cartesian system.
15. Take two pairs of numbers; each of the pairs denotes the coordinate of a point in Cartesian system. Now, using the pairs, calculate and show the distance between the points.
16. Take three numbers denoting the length (in cm) of three lines of any triangle. Now, find and show the perimeter and area of the triangle.
17. Take two numbers denoting the length (in cm) of base and height of a triangle. Now, find and show the area of the triangle.
18. Take four numbers denoting the length (in cm) of four lines of any rectangle. Now, find and show the area of the rectangle.
19. Take four numbers denoting the length (in cm) of four lines of any square. Now, find and show the area of the square.
20. Input the radius (in cm) of a circle. Calculate and print the perimeter and area of the circle.
21. Input the diameter (in cm) of a circle. Calculate and print the perimeter and area of the circle.

22. Given the value of covered distance of a particle at a given time, find out its average velocity.
23. Take the inputs for initial velocity, acceleration, and time of a particle. Now, calculate and show the final velocity of the particle.
24. Take the inputs for initial velocity, acceleration, and time of a particle. Now, calculate and show the covered distance of the particle.
25. Take the inputs for initial velocity, acceleration, and final velocity of a particle. Now, calculate and show the covered distance of the particle.
26. Take the inputs for initial velocity, deceleration, and time of a particle. Now, calculate and show the final velocity of the particle.
27. Take the inputs for initial velocity, deceleration, and time of a particle. Now, calculate and show the covered distance of the particle.
28. Take the inputs for initial velocity, deceleration, and final velocity of a particle. Now, calculate and show the covered distance of the particle.
29. Take the inputs for mass (in kilogram) and acceleration of a particle. Now, find and print the force (in newton) on the particle using Newton's law of motion.
30. Take the inputs for force (in newton), covered distance (in meter) and an angle between the force and distance (in degree). Now, calculate and show the amount of work-done (in Joule).
31. A particle has been projected with velocity V unit at angle A degree. Now find the following parameters.
 - a. Maximum height
 - b. Time to reach at maximum height
 - c. Horizontal Range
 - d. Time to come back at ground
 - e. Time of Flight
32. A bi-cycle rider wants to stay at X degree with a circular road of Y (meter) radius. Find and show the velocity (meter/second) for which he/she can stay at that angel without any accident. [The value of gravitational acceleration is 9.8 meter/second.]
33. A water pump has a work-done value X Joule at time T minute. Find and show its power in horse-power (HP).