The activities cover the following:

- input/output operations
- arithmetic operations
- formatting output
- type conversion
- mathematical library functions
- conversion of mathematical formulas into C programming language syntax

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1. Write a C program that converts a temperature in degrees Fahrenheit to degrees Celsius using the following formula. Your program should prompt the user to enter the degrees in Fahrenheit.

\[ F = \frac{9}{5} C + 32 \]

**Sample Run:**

Enter degrees in Fahrenheit: 90
90.00 Fahrenheit = 32.22 Celsius

2. Write a program that estimates the temperature in a freezer (in C) given by the elapsed time (hours) since a power failure. Assume this temperature \( T \) is given by

\[ T = \frac{4t^2}{t + 2} - 20 \]

where \( t \) is the time since the power failure. Your program should prompt the user to enter how long it has been since the start of failure in whole hours and minutes. Note that you will need to convert elapsed time into hours. For example: if the user enter 2 30 meaning that 2 hours and 30 minutes, you will need to convert this to 2.5 hours.

**Sample Run:**

Enter hours and minutes passed: 2 30
The temperature: -14.4

3. You are asked to write a C program to implement law of cosines. Law of cosines is given as:

\[ a^2 = b^2 + c^2 - 2bc \cos(A) \]
You will calculate the value of side a, of the triangle once other two sides, b and c, and the value of the angle A are given.

Convert degrees entered by the user into radians to use it in cos (cosine) function using the below formula to convert degrees to radians:

\[
\text{angle in radians} = \text{angle in degrees} \times \frac{3.14}{180}
\]

**Sample Run:**

Enter the values of two sides b and c of the triangle: 10 14  
Enter angle A: 44  
Side a=9.72

4. Write a C program that prompts the user to enter angles a and b in degrees, convert it to radian, and then calculates Sin(a + b).

\[
\sin(a+b) = \sin(a) \times \cos(b) + \sin(b) \times \cos(a)
\]

**Sample Run:**  
Enter angles a and b: 50 60  
Sin(50+60)=0.94

5. Write a program to input time in hours, minute and second. Program will convert time into seconds and display the result on the screen.  
**Sample run:**  
Enter hour: 2  
Enter minutes: 32  
Enter seconds: 10  
Time in seconds: 433930

6. Write a program to read electric consumption of a house in a month. It will read the counter values at the beginning and at the end of the month. Program will also read the cost of electricity per kilowatt. Then it will find and display how much money should be paid for electric consumption.  
**Sample run:**  
Enter counter reading at the beginning of the month: 120  
Enter counter reading at the end of the month: 200  
Enter cost per kilowatt: 1.5  
Amount to be paid: 120 TL

7. Write a program to check the output formats of the following values.

<table>
<thead>
<tr>
<th>Value</th>
<th>Format</th>
</tr>
</thead>
<tbody>
<tr>
<td>876</td>
<td>%2d, %6d, %-9d</td>
</tr>
<tr>
<td>123.45678</td>
<td>%6.3f, %6.4f, %10.2f, %5f</td>
</tr>
<tr>
<td>World</td>
<td>%2s, %10s</td>
</tr>
</tbody>
</table>