

**DWITE Online Computer Programming Contest
November 2004**

Problem 5

Wind Chill

From The Weather Network's webpage, the formula for the wind chill temperature (WCT) is calculated as follows:

$$\text{WCT} = 13.12 + 0.6215 \times \text{Tair} - 11.37 \times \text{V10metre}^{0.16} + 0.3965 \times \text{Tair} \times \text{V10metre}^{0.16}$$

Where: **Tair** - is the surface temp in Celcius
 V10metre - is the standard surface wind speed in km/hr

The following chart describes the rating and impact of wind chill temperatures.

Wind Chill Range	Rating	Impact
0 to -9	Low	<ul style="list-style-type: none">• minor increase in discomfort
-10 to -24	Moderate	<ul style="list-style-type: none">• uncomfortable• bare skin feels cold• danger of hypothermia if outdoors for extended periods
-25 to -44	Cold	<ul style="list-style-type: none">• Danger of skin freezing (frostbite)• Remember that the average person's skin begins to freeze at a wind chill of -25• Examine face, fingers, toes, ears and nose for numbness or whiteness• Threat of hypothermia if outdoors for extended periods
-45 to -59	Extreme	<ul style="list-style-type: none">• Exposed skin may freeze in mere minutes• Examine face, fingers, toes, ears and nose for numbness or whiteness• Severe danger of hypothermia if outdoors for long periods• Be prepared to end outdoor activities early or cancel them completely
-60 or colder	Danger	<ul style="list-style-type: none">• Conditions outside are hazardous• Skin left uncovered may freeze in under 2 minutes• If possible stay indoors

Write a program that determines the rating for the wind chill given the surface temperature in Celcius (Tair) and the standard surface wind speed in km/hr (V10metre).

The input file (**DATA51.txt** for the first submission and **DATA52.txt** for the second submission) will contain five sets of data. Each set will contain two lines of data, the first line will be Tair, an integer, $-65 \leq Tair \leq 0$ and the second line will be V10meter, an integer, $5 \leq V10meter \leq 80$.

The output file (**OUT51.txt** for the first submission and **OUT52.txt** for the second submission) will contain the WCT, followed by the Rating for the WCT, in upper case, separated by a space. $WCT \leq 0$. Note that the values in the wind chill range, appear to round up or down as necessary.

<u>Sample Input (Only three sets given)</u>	<u>Sample Output</u>
-10	-17 MODERATE
15	-2 LOW
0	-23 MODERATE
5	
-12	
36	

The Weather Network's webpage about windchill can be found at:

<http://www.theweathernetwork.com/inter/help/glossary/pages/windchill.htm>

To see Environment Canada's Wind Chill Calculator visit:

http://www.msc.ec.gc.ca/education/windchill/WindChill_Calculator_e.cfm