

CPS 188 Lab 2 : Programming Techniques

Instructor: Dr. Ufkes

TA: Mohammed Emrul Hasan

Section: 18

Sayeed Ahamad

Student Number: 501209136

1 Problem Sets

1.1 Problem 1

The error form to the 13 faulty buggy programs are as follows.

Fill this form after running each of the faulty programs. Copy and paste it to your lab 02 report

Program	Error Message	Cause of Error	Correction Applied
program01.c	Unknown Type name, DOUBLE	Use of "DOUBLE" instead of "double" as the variable type	Changed "DOUBLE" to "double"
program02.c	'%lf' expects argument of type 'double *'	Missing "&" before the variable to call and accept the value	Inserted "&" before the variable is called in scanf function
program03.c	incompatible types when returning type 'double (*) (double, double)'	Calling and Returning the function in the return function	changed the variable name from the function name to variable in function name
program04.c	'%lf' expects argument of type 'double'	Calling an function instead of a pre-assigned variable in printf function	Replaced the function in printf with an actual variable returning the function value
program05.c	incompatible type for argument 1 of 'aver'	Incorrect Calling of variable as if scanning the variable for values	Removed "&" in "&x"
program06.c	No Error	No Error	Changed the aver function from $n1 + n2 / 2.0$ to $(n1 + n2) / 2.0$
program07.c	expected '{' at end of input	main missing "{" & aver casted as int instead of double	changed aver function type to double and added "{" at beginning of main
program08.c	'result' undeclared	Variable "result" undefined and un-initialised in local function	Changed the function name in return value to local variable
program09.c	expected ';' before 'printf'	Missing ";" for statement termination	Added ";" to terminate statement
program10.c	expected statement before ')' token	Missing "(" at the beginning of printf function	Added "(" at the beginning of printf function
program11.c	'n1' & 'n2' undeclared	"x" & "y" are initialized instead of "n1" & "n2"	Replaced "n1" & "n2" with "x" & "y"
program12.c	unknown conversion type character	Undefined "%2.2lf" used as a placeholder for scanning of floating points	Replaced "%2.2lf" with "%lf" as placeholder
program13.c	too few arguments to function	Pre-defined function calls for 2 inputs. Only one input in main is defined	Replaced "aver(x)" with "aver(x,y)"

1.2 Problem 2

1.2.1 Algorithm

- Declare, Scan and store value temperature in Celsius
- Convert Celsius temperature to Fahrenheit temperature
- Substitute the Fahrenheit temperature in the formula
- convert the formula speed from ft/s to km/h
- Print the km/h speed as output to user

1.2.2 Computer Program

```
1  /* Program to Calculate the speed of sound given some
   Temperature Input */
2
3  #include <stdio.h>
4  #include <math.h>
5
6  void spsound(void);
7
8  int main(void)
9  {
10     spsound();
11 }
12
13 void spsound(void)
14 {
15     /* Celcius temperature input */
16     double celsius;
17     printf("Enter the Temperature of Air: ");
18     scanf("%lf", &celsius);
19
20     /* Celsius to Fahrenheit Conversion */
21     double fahrenheit = ((celsius * 9) / 5) + 32;
22
23     /* Speed of Air calculation */
24     double speed = 1086 * sqrt((5 * fahrenheit + 297) / 247);
25
26     /* ft/s to km/h Conversion of speed */
27     speed = speed * 1.09728;
28
29     /* Printing the speed as the function output*/
30     printf("\nThe Speed of the Air at %.3lf Celsius is %.3lf
   km/h\n", celsius, speed);
31 }
32
```

33
34
35
36



Listing 1.1: *Speed of Sound Calculating Program*