1.

Program	Error Message	Cause of Error	Correction Applied
program01.c	lab2r.c:27:28: warning: format '%lf' expects argument of type 'double', but argument 2 has type 'int' [-Wformat=]	Variable initialization type is incorrect. By spelling double in all caps, it's become a variable instead	Replace line 17 with: double x,y,result;
program02.c	lab2r.c:23:2: warning: 'y' is used uninitialized in this function [-Wuninitialized]	No variable memory address specified in the scanf in line 23	Replace line 23 with: scanf ("%lf", &y);
program03.c	1. Incompatible types when returning type 'double (*)(double, double)' but 'double' was expected 2. lab2r.c:6:9: warning: variable 'ave' set but not used [-Wunused-but-set-variable] 3. lab2r.c:11:1: warning: control reaches end of non-void function [-Wreturn-type]	1. Return outputs the function name, not the variable 2. Error due to the fact that the variable ave was never used (as a result of the previous error not returning the value of ave) 3. If aver continuously returns the function aver the program will continuously loop inside aver	Replace line 10 with: return (ave);
program04.c	1. lab2r.c:27:28: warning: format '%lf' expects argument of type 'double', but argument 2 has type 'double (*)(double, double)' [-	1. Function aver is used in line 27 without giving it arguments 2. The variable result is giving a value but it's never used	Change line 27 to: printf ("The average is %lf.3\n", result);

	Wformat=] 2. lab2r.c:17:15: warning: variable 'result' set but not used [-Wunused-but-set-variable]		
program05.c	1. lab2r.c:25:17: error: incompatible type for argument 1 of 'aver' 2. lab2r.c:4:14: note: expected 'double' but argument is of type 'double *'	1. The first argument, '&x' is written improperly 2. As a result of error 1, function aver was a different argument 1 type than required	Replace line 25 with: result = aver (x,y);
program06.c	Logic error line 8	Technically there should be a bracket around the denominator when calculating average. However, the operator precedence states that unary addition is calculated before division, so a bracket is not necessary here, but could be helpful here for preventing confusion	Replace line 8 with: ave = (n1 + n2) / 2.0;
program07.c	1. lab2r.c:8:2: error: expected declaration specifiers before 'ave' 2. lab2r.c:10:2: error: expected declaration specifiers before 'return' 3. lab2r.c:11:1: error: expected declaration specifiers before '}' token	1. Function type for aver is wrong. Any value in the return variable is a double type, therefore function type should also be double 2. Missing a { in aver function	1. Replace line 4 with aver (double n1, double n2) { 2. Change aver return type to double

	4. lab2r.c:16:1: error: expected '=', ',', ';', 'asm' or '__attribute__' before '{' token 5. lab2r.c:4:1: error: old-style parameter declarations in prototyped function definition 6. lab2r.c:31: error: expected '{' at end of input 7. lab2r.c:31: warning: control reaches end of non-void function [-Wreturn-type]		
program08.c	1. lab2r.c:10:10: error: 'result' undeclared (first use in this function) 2. lab2r.c:10:10: note: each undeclared identifier is reported only once for each function it appears in 3. lab2r.c:6:9: warning: variable 'ave' set but not used [-Wunused-but-set-variable] 4. lab2r.c:11:1: warning: control reaches end of non-void function [-Wreturn-type]	1. Variable ‘result’ in the return statement isn’t declared in aver function (result isn’t a global variable, therefore has no value across the board) 2. 3. Variable ‘ave’ in function aver is initialized but never used 4. Since the return statement in function aver is invalid, aver technically never stop loops	1. Replace line 10 with: return (ave); 2. 3. Will be solved when change #1 implemented 4. Will be solved when change #1 implemented

program09.c	1. lab2r.c:25:21: error: expected ';' before 'printf' 2. lab2r.c:17:15: warning: variable 'result' set but not used [-Wunused-but-set-variable]	1. The end of line 25 is missing a ‘;’ 2. Error stems from the result variable not being able to be used because of error 1	1. result = aver (x,y);
program10.c	1. lab2r.c:27:2: warning: statement with no effect [-Wunused-value] 2. lab2r.c:27:8: error: expected ';' before string constant 3. lab2r.c:27:40: error: expected statement before ')' token 4. lab2r.c:17:15: warning: variable 'result' set but not used [-Wunused-but-set-variable]	1. Printf statement doesn’t work since the starting bracket that helps encompass the elements of printf is missing 2. 3.	1.
program11.c	1. lab2r.c:8:9: error: 'n1' undeclared (first use in this function) 2. lab2r.c:8:9: note: each undeclared identifier is reported only once for each function it appears in 3. lab2r.c:8:14: error: 'n2' undeclared (first use in this function)	1. Variables n1 and n2 haven’t been initialized in function aver	1. Change line 8 to: ave = (x + y) / 2.0;

program12.c	1. lab2r.c:20:12: warning: unknown conversion type character '.' in format [-Wformat=] 2. lab2r.c:20:9: warning: too many arguments for format [-Wformat-extra-args] 3. lab2r.c:23:12: warning: unknown conversion type character '.' in format [-Wformat=] 4. lab2r.c:23:9: warning: too many arguments for format [-Wformat-extra-args]	1. Scanf function contains prinf formatting syntax	1. Remove the '2.2' in lines 20 and 23
program13.c	1. lab2r.c:25:11: error: too few arguments to function 'aver' 2. lab2r.c:4:1: note: declared here	1. The call to aver function lacks an argument	1. Change line 25 to: result = aver (x,y);

2.

1. Obtain temp in C from user using scanf
2. Convert temp from C to F using the C to F formula in a separate function
3. Plug F temp into equation a = 1086 (5t + 297) / 247 to obtain the speed in ft/s
4. Convert ft/s result into km/h by multiplying by 1.097
5. Output final number to user, rounded to 2 decimal points

```
#include <stdio.h>
#include <math.h>
```

```
static double spsound(double T);
static double tempC2F(double C);
static double fts2kmh(double fts);

/* speed of sound calc (deg C)*/
double spsound (double T){
	double spft, F;
	F = tempC2F(T);

	spft = 1086*sqrt( ( (5*F)+297 )/247.0 );
	printf("Speed in ft/s: %lf", spft);

	return (fts2kmh(spft));
}

double tempC2F(double C){
	return ((C*9/5)+32);
}

double fts2kmh(double fts){
	return (fts*1.097);
}

int
main (void)
{
	double usersp;

	/* get deg C*/
	printf ("Enter a temperature in C: ");
	scanf ("%lf", &usersp);

	/* output km/h*/
	printf ("The speed in km/h is %lf.\n", spsound(usersp));

	return (0);
}
```