

SAIL: Assignment 4

Student Name:

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Reading Assignment: C++ Primer, 5th edition

- Chapter 4 – Expressions

True or False:

1. **0.5 pt** – A same symbol can denote both a unary operator and a binary operator.
2. **0.5 pt** – A compile-time warning is always given when an overflow exception occurs.

Short Questions:

1. **1 pt** – What is an overloaded operator?
2. **1 pt** – Define a compound expression?
3. **1 pt** – Determine the results of the following expressions and test your answers by compiling the expressions.
 - (a) `-40 * 4 + 23 / 7`
 - (b) `-40 + 4 * 23 / 7`
 - (c) `40 / 4 * 23 % 7`
 - (d) `-40 / 4 * 23 % 7`
4. **1 pt** – What is the meaning of short-circuit evaluation in the context of logical operators?
5. **1 pt** – Explain the structure of the conditional operator: `cond ? expr1 : expr2`.
6. **1 pt** – Consider the following variables of the given type.

```
bool flag; char cval;
short sval; unsigned short usval;
int ival; unsigned int uival;
long lval; unsigned long ulval;
float fval; double dval;
```

Determine the type of each expression below.

- (a) `ival + lval`.
- (b) `ival + ulval`.
- (c) `cval + lval`.
- (d) `ival + dval`.
- (e) `fval + dval`.
- (f) `ival + uival`.
- (g) `flag + ival`.
- (h) `lval + ulval`.

Programming Challenge:

1. Using the increment operator, write a program that prints all the elements of a `vector<double>`. The program should also output the arithmetic mean, the median, the mode and the unbiased sample variance of the data set. Provide your results for a vector `vec` whose entries are the first 50 numbers in the decimal expansion of π (<http://oeis.org/A000796>).
2. Implement your application in C++.
3. Using Eclipse and SVN, commit your code as a project in a directory labeled `Cpp` and under project name `Code4`.