1 Instructions

1. Each question is worth 4 points.

2. Attempt as many problems as you can. You will be given partial credit, as per the policy discussed in class.

2 Problems

1. Describe with examples the difference between storage semantics and pointer semantics when it comes to assignment statements in a programming language.

2. Consider the following fragment of C code.

```c
int x = 2;
switch (x) {
  case 1: if (x >2)
  case 2: x++;
  default: break;
}
```

Explain whether or not the code is syntactically correct? If so, what is the value of \( x \) when the fragment has completed execution.

3. Consider the following function definition:

```c
sum( x, y )
{
  return x+y;
}
```

Using the Hindley-Milner type-checking scheme, infer the type of \( \text{sum}() \) and its parameters.

4. Describe the different types of parameter passing mechanisms commonly found in programming languages, with one example of each.

5. Briefly describe the different techniques to reclaim storage in a programming environment.