1 Instructions

1. Each question is worth 3 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. Enumerate with examples, the different kinds of allocation in a block-structured language, with heap allocation.

2. Consider the following C fragment.

```c
int i;
int a[10];
for( i = 0; i < 10; i++)
    i[a] = i;
```

Provide an explanation on whether or not the above code will compile and run correctly.

3. Provide an informal definition of the term type constructor. Enumerate (with one example each) 3 different types of type constructors that occur in a typical programming language.

4. Informally describe what is meant by the term Unification in polymorphic type checking. Apply the rules of unification to deduce the types of all names in the expression $a[i] + i$, assuming that these types are not known.

5. Briefly describe the issues involved in the implementation of the for loop structure in a programming language, that make it different from the while loop structure.