Principles of Programming Languages - Quiz II

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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.

```
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 *Unifcation* 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.