1. Suppose that a dynamic set *S* is represented by a direct-address table *T* of length *m*. Describe a procedure that finds the maximum element of *S*. What is the worst-case performance of your procedure? (11.1-1)
2. Demonstrate the insertion of the keys 5, 28, 19, 15, 20, 33, 12, 17, 10 into a hash table with collisions resolved by chaining. Let the table have 9 slots, and let the hash function be *h*(*k*) = *k* mod 9. (11.2-2)
3. Consider a hash table of size *m*=1000 and a corresponding hash function. Compute the locations to which the keys 61, 62, 63, 64, and 65 are mapped. (11.3-4)
4. Consider inserting the keys 10, 22, 31, 4, 15, 28, 17, 88, 59 into a hash table of length *m*=11 using open addressing with the primary hash function . Illustrate the result of inserting these keys using linear probing, using quadratic probing with *c*1=1 and *c*2=3, and using double hashing with . (11.4-1)
5. Suppose that we use double hashing to resolve collisions; that is, we use the hash function Show that if *m* and *h*2(*k*) have greatest common divisor , for some key *k*, then an unsuccessful search for key *k* examines (1/*d*)th of the hash table before returning to slot *h*1(*k*). Thus, when *d* = 1, so that *m* and *h*2(*k*) are relatively prime, the search may examine the entire hash table. (11.4-3)