Solutions to Assignment 6

Question 1

```
/* Return length of longest run of zeroes in array s
   of n characters. */

int runlen ( int s[], int n )
{
  int i, l, m ;            /* index, & run lengths */

  l = m = 0 ;

  for ( i=0 ; i<n ; i++ ) {
    if ( s[i] != 0 ) {      /* end of run */
      if ( l > m ) {        /* longest run so far */
        m = l ;
      }
      l = 0 ;
    } else {                /* continue run */
      l++ ;
    }
  }
  return m ;
}
```

Question 2

(a)

```
/* Return value of binary number in s. */

int bin2i ( char s[] )
{
  int i, n ;

  n = 0 ;
  for ( i=0 ; s[i] == ' ' ; i++ ) {
    /* skip leading spaces */
  }

  for ( ; s[i] != 0 && s[i] != ' ' ; i++ ) {
    n = 2 * n + ( s[i] - '0' ) ;
  }

  return n ;
}
```

(b)

```
/* Return value of hex number in s. */

int hex2i ( char s[] )
{
  int i, n, m ;

  n = 0 ;
  for ( i=0 ; s[i] == ' ' ; i++ ) {
    /* skip leading spaces */
  }
```

```
  for ( ; s[i] != 0 && s[i] != ' ' ; i++ ) {
    if ( s[i] >= '0' && s[i] <= '9' ) {
      m = s[i] - '0' ;          /* decimal */
    } else if ( s[i] >= 'a' && s[i] <= 'f' ) {
      m = s[i] - 'a' + 10 ;     /* l/case hex */
    } else if ( s[i] >= 'A' && s[i] <= 'F' ) {
      m = s[i] - 'A' + 10 ;     /* u/case hex */
    }
    n = 16*n + m ;
  }

  return n ;
}
```

Question 3

```
/* Copy string a concatenated with string b to
   string c. */

void concat ( char a[], char b[], char c[] )
{
  int i, j ;

  j=0 ;
  for ( i=0 ; a[i] ; i++ ) {
    c[j++] = a[i] ;    /* copy a to c */
  }

  for ( i=0 ; b[i] ; i++ ) {
    c[j++] = b[i] ;    /* append b to c */
  }

  c[j] = 0 ;    /* terminate c */
}
```

Question 4

```
/* Return total number of occurences of characters
   in string v in string s. */

int cntvalid ( char s[], char v[] )
{
  int i, j, n ;

  n = 0 ;
  for ( j=0 ; v[j] ; j++ ) {
    for ( i=0 ; s[i] ; i++ ) {
      if ( v[j] == s[i] ) {
        n++ ;
      }
    }
  }

  return n ;
}
```