0.1 Convert string to decimal string using prefixed notation

The input string is in prefix (16r, (10r), 8r, 2r) notation. It returns a decimal number.

1a ⟨*convertInteger.m* 1a⟩≡
```
+ (int) convertInteger: (NSString*) inString
{
    ⟨if string is null then exit with 0 1b⟩

    ⟨Find where the prefix character is in the string 1c⟩
    if ( radixRange.location == NSNotFound) {
        ⟨decimal string found so return integer value directly 1d⟩
    } else {
        ⟨radix value found so process remainder of string 1e⟩
    }
    return returnValue;
} // convertInteger
```
Uses `radixRange` 1c and `returnValue` 2f.

We could return `null` here if returning `NSInteger`.

1b ⟨*if string is null then exit with 0* 1b⟩≡ (1a)
```
if ( inString == NULL ) return 0;
```

1c ⟨*Find where the prefix character is in the string* 1c⟩≡ (1a)
```
NSRange radixRange = [inString rangeOfString:@"r"];
```
Defines:
`radixRange`, used in chunks 1a and 2e.

1d ⟨*decimal string found so return integer value directly* 1d⟩≡ (1a)
```
return (int)[inString integerValue];
```

1e ⟨*radix value found so process remainder of string* 1e⟩≡ (1a)
```
⟨extract the prefix radix 2e⟩
⟨set up return value 2f⟩
⟨Set up loop variables 2a⟩
for ( int i = (int)radixLength+1; i < [inString length]; i++ ) {
    ⟨get next character into a string value 1f⟩
    ⟨get character range from list of possible digits 2b⟩
    ⟨add the digit to the return value 2c⟩
}
```
Uses `radixLength` 2e.

`nextChar` is a convenience variable to make things easier to read.

1f ⟨*get next character into a string value* 1f⟩≡ (1e)
```
s = [NSString stringWithFormat:@"%c", [inString characterAtIndex:i]];
```
Uses `s` 2d.

To pull the correct value from the list of characters.

2a ⟨*Set up loop variables* 2a⟩≡ (1e) 2d▷

```
NSRange charRange;
```

Defines:
`charRange`, used in chunk 2.

The range result (location) will be the multiplier for the radix.

2b ⟨*get character range from list of possible digits* 2b⟩≡ (1e)

```
charRange = [ @"0123456789ABCDEF"
               rangeOfCharacterFromSet: [NSCharacterSet
                                           characterSetWithCharactersInString: s]];
```

Uses `charRange` 2a and `s` 2d.

2c ⟨*add the digit to the return value* 2c⟩≡ (1e)

```
returnValue = radix * returnValue + (int)charRange.location;
```

Uses `returnValue` 2f, `radix` 2e, and `charRange` 2a.

Another convenience variable.

2d ⟨*Set up loop variables* 2d⟩+≡ (1e) ◁2a

```
NSString *s;
```

Defines:
`s`, used in chunks 1f and 2b.

2e ⟨*extract the prefix radix* 2e⟩≡ (1e)

```
NSUInteger radixLength = radixRange.location;
NSString *radixString = [inString substringToIndex:radixLength];
int radix = [radixString intValue];
```

Defines:
`radix`, used in chunk 2c.
`radixLength`, used in chunk 1e.
`radixString`, never used.
Uses `radixRange` 1c.

2f ⟨*set up return value* 2f⟩≡ (1e)

```
int returnValue = 0;
```

Defines:
`returnValue`, used in chunks 1a and 2c.

A Index of Chunks

B Index of Variables

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