C functions for strings:

```
size_t strlen(const char *s);
int strncmp(const char *s1, const char *s2, size_t n);
char *strncpy(char *dest, const char *src, size_t n);
char *strncat(char *dest, const char *src, size_t n);
char *index(const char *s, int c);
char *strchr(const char *s, int c);
char *strstr(const char *haystack, const char *needle);
```

C functions for files and directories:

```
int closedir(DIR *dir);
int fclose(FILE *stream);
char *fgets(char *s, int n, FILE *stream);
FILE *fopen(const char *file, const char *mode);
int fprintf(FILE *stream, const char *format, ...);
char *getcwd(char *buf, size t size);
DIR *opendir(const char *name);
struct dirent *readdir(DIR *dir);
int stat(const char *file name, struct stat *buf);
void perror(const char *s);
```

```
struct stat {
  dev_t         st_dev;     /* device */
  ino_t         st_ino;     /* inode */
  mode_t        st_mode;    /* protection */
  nlink_t       st_nlink;   /* number of hard links */
  off_t         st_size;    /* total size, in bytes */
  unsigned long st_blksize; /* blocksize for filesystem I/O */
  unsigned long st_blocks;  /* number of blocks allocated */
  time_t        st_atime;   /* time of last access */
  time_t        st_mtime;   /* time of last modification */
  time_t        st_ctime;   /* time of last change */
};
```

The following POSIX macro functions are defined to check the file type (`m` is the `st_mode` field of the stat struct):
`S_ISLNK(m)` is it a symbolic link?
`S_ISREG(m)` regular file?
`S_ISDIR(m)` directory?

Shell variables:
`$$` shell process ID
`$?` last exit status
`$#` number of arguments
`$*` all arguments as string
`"$@"` all arguments as quoted list

Shell test comparison operators:

Shell	Description
-d filename	Exists as a directory
-f filename	Exists as a regular file.
-r filename	Exists as a readable file
-w filename	Exists as a writable file.
-x filename	Exists as an executable file.
-z string	True if empty string
str1 = str2	True if str1 equals str2
str1 != str2	True if str1 not equal to str2
int1 -eq int2	True if int1 equals int2
-ne, -gt, -ge, -lt, -le	Comparisons for numbers
!=, >, >=, <, <=	Comparisons for strings
-a, -o	And, or.