My Project

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Chapter 1

File Index

1.1 File List

Here is a list of all files with brief descriptions:

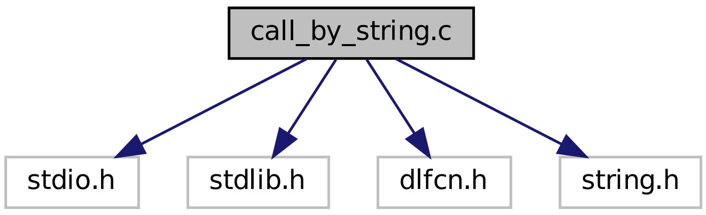
Chapter 2

File Documentation

2.1 call_by_string.c File Reference

```
#include <stdio.h>
#include <stdlib.h>
#include <dlfcn.h>
#include <string.h>
```

Include dependency graph for call_by_string.c:



Functions

- int main (int argc, char ∗argv[ ])

2.1.1 Function Documentation

2.1.1.1 main()

```
int main (
            int argc,
            char * argv[] )
```

Definition at line 6 of file call_by_string.c.

```
00007 {
00008   void *handle;
00009   char *error;
00010   double (*cosine) (double);
00011   int (*func) (int, char*[]);
00012
00013   char command[1024];
00014   handle = dlopen ("/home/alef/Documents/coding/c/so/cmake-build-debug/libfichas.so", RTLD_LAZY);
00015   if (!handle)
00016     {
00017       fprintf (stderr, "%s\n", dlerror ());
00018       exit (EXIT_FAILURE);
00019     }
00020
00021   dlerror ();    /* Clear any existing error */
00022
00023   /* Writing: cosine = (double (*)(double)) dlsym(handle, "cos");
00024      would seem more natural, but the C99 standard leaves
00025      casting from "void *" to a function pointer undefined.
00026      The assignment used below is the POSIX.1-2003 (Technical
00027      Corrigendum 1) workaround; see the Rationale for the
00028      POSIX specification of dlsym(). */
00029
00030   //*(void **)(&cosine) = dlsym (handle, "cos");
00031   *(void **)(&func) = dlsym (handle, argv[1]);
00032   if ((error = dlerror ()) != NULL)
00033     {
00034       fprintf (stderr, "%s\n", error);
00035       exit (EXIT_FAILURE);
00036     }
00037
00038   (*func) (argc, argv);
00039
00040   dlclose (handle);
00041   exit (EXIT_SUCCESS);
00042 }
```

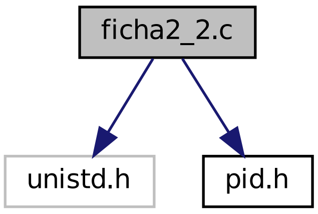
2.2 call_by_string.c

```
00001 #include <stdio.h>
00002 #include <stdlib.h>
00003 #include <dlfcn.h>
00004 #include <string.h>
00005
00006 int main (int argc, char *argv[])
00007 {
00008   void *handle;
00009   char *error;
00010   double (*cosine) (double);
00011   int (*func) (int, char*[]);
00012
00013   char command[1024];
00014   handle = dlopen ("/home/alef/Documents/coding/c/so/cmake-build-debug/libfichas.so", RTLD_LAZY);
00015   if (!handle)
00016     {
00017       fprintf (stderr, "%s\n", dlerror ());
00018       exit (EXIT_FAILURE);
00019     }
00020
00021   dlerror ();    /* Clear any existing error */
00022
00023   /* Writing: cosine = (double (*)(double)) dlsym(handle, "cos");
00024      would seem more natural, but the C99 standard leaves
00025      casting from "void *" to a function pointer undefined.
00026      The assignment used below is the POSIX.1-2003 (Technical
00027      Corrigendum 1) workaround; see the Rationale for the
00028      POSIX specification of dlsym(). */
00029
00030   //*(void **)(&cosine) = dlsym (handle, "cos");
00031   *(void **)(&func) = dlsym (handle, argv[1]);
00032   if ((error = dlerror ()) != NULL)
00033     {
      fprintf (stderr, "%s\n", error);
      exit (EXIT_FAILURE);
    }

  (*func) (argc, argv);

  dlclose (handle);
  exit (EXIT_SUCCESS);
}

```

2.3 ficha2_2.c File Reference

```
#include <unistd.h>
#include "pid.h"
```

Include dependency graph for ficha2_2.c:



Functions

- int main (void)

2.3.1 Function Documentation

2.3.1.1 main()

```
int main (
            void  )
```

Definition at line 4 of file ficha2_2.c.

```
                    {
  fork();
  print_child_report ();
  return 0;
}
```

References print_child_report().

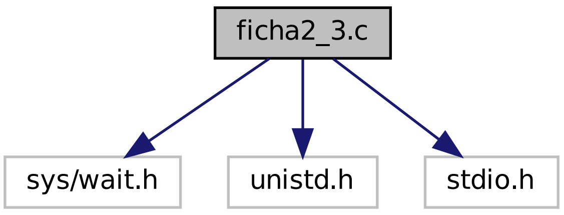
2.4 ficha2_2.c

```
#include <unistd.h>
#include "pid.h"

int main(void) {
  fork();
  print_child_report ();
  return 0;
}
```

2.5 ficha2_3.c File Reference

```
#include <sys/wait.h>
#include <unistd.h>
#include <stdio.h>
```

Include dependency graph for ficha2_3.c:



Functions

- int main (void)

  Programa que cria dez processos filhos que executam sequencialmente.

2.5.1 Function Documentation

2.5.1.1 main()

```
int main (
        void )
```

Programa que cria dez processos filhos que executam sequencialmente.

- Os filhos imprimem o seu PID e o do seu pai, e finalmente, terminam a sua execução.
- O valor de saida de cada filho é igual ao seu numero de ordem (e.g.: primeiro filho criado termina com o valor 1).

- O pai imprime o codigo de saida de cada um dos seus filhos.

Definition at line 13 of file ficha2_3.c.

```
00013           {
00014     int status;
00015     int nFilhos = 10;
00016     for (int i = 0; i < nFilhos; i++) {
00017         if (fork() == 0) {// Child does something
00018             fprintf(stderr, "My father’s PID: %d\nMy PID: %d\n\n", getppid(), getpid());
00019             _exit(i);
00020         } else {// Parent does something
00021             pid_t wait_ret = wait(&status);
00022             fprintf(stderr, "Filho %d saiu com código %d\n\n", wait_ret, WEXITSTATUS(status));
00023         }
00024     }
00025     return 0;
00026 }
```

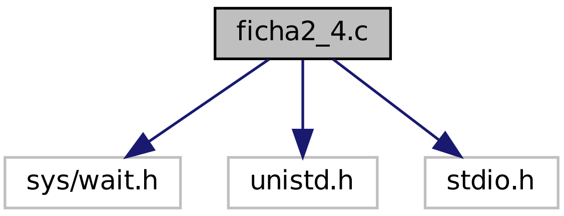
2.6 ficha2_3.c

```
00001 #include <sys/wait.h> // for wait()
00002 #include <unistd.h> // for fork()
00003 #include <stdio.h> // for fprintf()
00004 
00013 int main(void) {
00014     int status;
00015     int nFilhos = 10;
00016     for (int i = 0; i < nFilhos; i++) {
00017         if (fork() == 0) {// Child does something
00018             fprintf(stderr, "My father’s PID: %d\nMy PID: %d\n\n", getppid(), getpid());
00019             _exit(i);
00020         } else {// Parent does something
00021             pid_t wait_ret = wait(&status);
00022             fprintf(stderr, "Filho %d saiu com código %d\n\n", wait_ret, WEXITSTATUS(status));
00023         }
00024     }
00025     return 0;
00026 }
```

2.7 ficha2_4.c File Reference

```
#include <sys/wait.h>
#include <unistd.h>
#include <stdio.h>
```

Include dependency graph for ficha2_4.c:



Functions

- int main (void)

  Cria dez processos filhos em concorrência.

2.7.1 Function Documentation

2.7.1.1 main()

```
int main (
              void   )
```

Cria dez processos filhos em concorrência.

O pai espera pelo fim da execução de todos os filhos, imprimindo os respectivos códigos de saída.

Definition at line 11 of file ficha2_4.c.

```
00011                {
00012     int status;
00013     int nFilhos = 10;
00014     for (int i = 0; i < nFilhos; i++) {// Child does something
00015         if (fork() == 0) {
00016             fprintf(stderr, "My father's PID: %d\nMy PID: %d\n\n", getppid(), getpid());
00017             _exit(i);
00018         }
00019     }
00020     /* Parent waits each child and prints than immediately */
00021     for (int _ = 0; _ < nFilhos; _++) {//Parent does something
00022         pid_t wait_ret = wait(&status);
00023         fprintf(stderr, "Filho %d acabou com código %d\n\n", wait_ret, WEXITSTATUS(status));
00024     }
00025     return 0;
00026 }
```

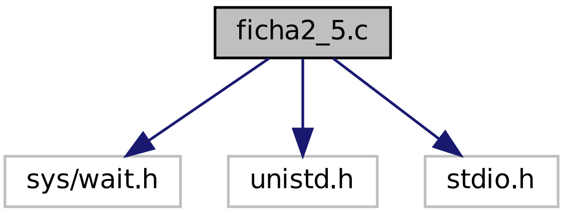
2.8 ficha2_4.c

```
00001 #include <sys/wait.h> // for wait()
00002 #include <unistd.h> // for fork()
00003 #include <stdio.h> // for fprintf()
00004
00011 int main(void) {
00012     int status;
00013     int nFilhos = 10;
00014     for (int i = 0; i < nFilhos; i++) {// Child does something
00015         if (fork() == 0) {
00016             fprintf(stderr, "My father's PID: %d\nMy PID: %d\n\n", getppid(), getpid());
00017             _exit(i);
00018         }
00019     }
00020     /* Parent waits each child and prints than immediately */
00021     for (int _ = 0; _ < nFilhos; _++) {//Parent does something
00022         pid_t wait_ret = wait(&status);
00023         fprintf(stderr, "Filho %d acabou com código %d\n\n", wait_ret, WEXITSTATUS(status));
00024     }
00025     return 0;
00026 }
```

2.9 ficha2_5.c File Reference

```
#include <sys/wait.h>
#include <unistd.h>
```

```
#include <stdio.h>
```
Include dependency graph for ficha2_5.c:



Functions

- int main ()

  Cria (dez) filhos em profundidade.

2.9.1 Function Documentation

2.9.1.1 main()

```
int main ( )
```

Cria (dez) filhos em profundidade.

Cada processo imprime seu PID e o PID de seu pai.

O programa vai até o 10º nível de profundidade.

Definition at line 12 of file ficha2_5.c.

```
00012           {
00013     int status;
00014     int nFilhos = 10;
00015     /* The starting process. */
00016     fprintf(stderr, "My father's PID: %d\nMy PID: %d\nIteration: %d\n\n", getppid(), getpid(), -1);
00017     /* Creation of nFilhos process. */
00018     for (int i = 0; i < nFilhos; i++) {
00019         if (fork() == 0) {// Child does something
00020             fprintf(stderr, "My father's PID: %d\nMy PID: %d\nIteration: %d\n\n", getppid(), getpid(),
       i);
00021         } else {// Parent does something
00022             pid_t terminated = wait(&status);
00023             fprintf(stderr, "[Pai (my PID is %d)] process %d. Exit with code %d\nIteration: %d\n\n",
00024                     getpid(), terminated, WEXITSTATUS(status), i);
00025             _exit(0);
00026         }
00027     }
00028     return 0;
00029 }
```

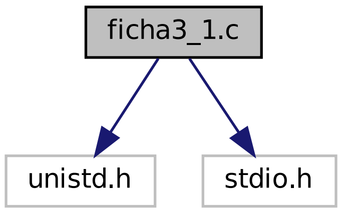
2.10 ficha2_5.c

```
#include <sys/wait.h> // for wait()
#include <unistd.h> // for fork()
#include <stdio.h> // for fprintf()

int main() {
    int status;
    int nFilhos = 10;
    /* The starting process. */
    fprintf(stderr, "My father's PID: %d\nMy PID: %d\nIteration: %d\n\n", getppid(), getpid(), -1);
    /* Creation of nFilhos process. */
    for (int i = 0; i < nFilhos; i++) {
        if (fork() == 0) {// Child does something
            fprintf(stderr, "My father's PID: %d\nMy PID: %d\nIteration: %d\n\n", getppid(), getpid(),
 i);
        } else {// Parent does something
            pid_t terminated = wait(&status);
            fprintf(stderr, "[Pai (my PID is %d)] process %d. Exit with code %d\nIteration: %d\n\n",
                    getpid(), terminated, WEXITSTATUS(status), i);
            _exit(0);
        }
    }
    return 0;
}
```

2.11 ficha3_1.c File Reference

```
#include <unistd.h>
#include <stdio.h>
```

Include dependency graph for ficha3_1.c:



Functions

- int main (void)

2.11.1 Function Documentation

2.11.1.1 main()

```
int main (
            void )
```

Definition at line 4 of file ficha3_1.c.

```
00004                {
00005   int ret;
00006   //Como ls é uma váriavel de ambiente, não é precisso dar o caminho completo
00007   ret = execl("/bin/ls", "ls", "-l", "-a", NULL);
00008   printf("Se tudo ocorreu bem, esse printf nunca acontece\n");
00009   perror("Erro");
00010   return ret;
00011 }
```

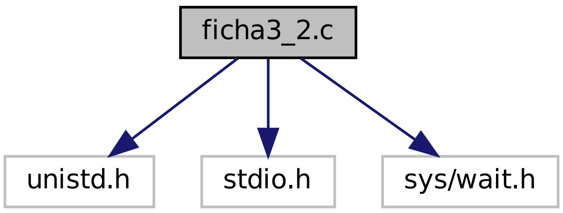
2.12 ficha3_1.c

```
00001 #include <unistd.h>
00002 #include <stdio.h>
00003
00004 int main(void){
00005   int ret;
00006   //Como ls é uma váriavel de ambiente, não é precisso dar o caminho completo
00007   ret = execl("/bin/ls", "ls", "-l", "-a", NULL);
00008   printf("Se tudo ocorreu bem, esse printf nunca acontece\n");
00009   perror("Erro");
00010   return ret;
00011 }
```

2.13 ficha3_2.c File Reference

```
#include <unistd.h>
#include <stdio.h>
#include <sys/wait.h>
```

Include dependency graph for ficha3_2.c:



Functions

- int main (void)

2.13.1 Function Documentation

2.13.1.1 main()

```
int main (
            void )
```

Definition at line 4 of file ficha3_2.c.

```
00005 {
00006   int status;
00007   char *exec_args[] = {"", "-l", NULL};
00008   pid_t fork_ret = fork ();
00009   if (fork_ret == 0)
00010     {
00011       fprintf (stderr, "PID do filho %d\n", getpid ());
00012       int exec_ret = execvp ("/bin/ls", exec_args);
00013       fprintf (stderr, "Se tudo ocorreu bem, esse printf nunca acontece\n");
00014       perror ("Erro de exec");
00015       _exit (exec_ret);
00016     }
00017   else
00018     {
00019       fprintf (stderr, "PID do pai %d\n", getpid ());
00020       int wait_ret = wait (&status);
00021       fprintf (stderr, "O filho retornou %d\n", WEXITSTATUS(status));
00022     }
00023   return 0;
00024 }
```

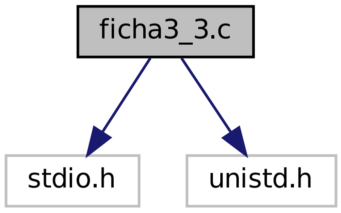
2.14 ficha3_2.c

```
00001 #include <unistd.h>
00002 #include <stdio.h>
00003 #include <sys/wait.h>
00004 int main (void)
00005 {
00006   int status;
00007   char *exec_args[] = {"", "-l", NULL};
00008   pid_t fork_ret = fork ();
00009   if (fork_ret == 0)
00010     {
00011       fprintf (stderr, "PID do filho %d\n", getpid ());
00012       int exec_ret = execvp ("/bin/ls", exec_args);
00013       fprintf (stderr, "Se tudo ocorreu bem, esse printf nunca acontece\n");
00014       perror ("Erro de exec");
00015       _exit (exec_ret);
00016     }
00017   else
00018     {
00019       fprintf (stderr, "PID do pai %d\n", getpid ());
00020       int wait_ret = wait (&status);
00021       fprintf (stderr, "O filho retornou %d\n", WEXITSTATUS(status));
00022     }
00023   return 0;
00024 }
```

2.15 ficha3_3.c File Reference

```
#include <stdio.h>
#include <unistd.h>
```

Include dependency graph for ficha3_3.c:



Functions

- int main (int argc, char ∗argv[ ])

2.15.1 Function Documentation

2.15.1.1 main()

```
int main (
              int argc,
              char ∗ argv[ ] )
```

Definition at line 4 of file ficha3_3.c.

```
{
  for (int i = 1; i < argc; i++)
    {
      for (int j = 0; argv[i][j] != 0; j++)
        write (STDOUT_FILENO, &argv[i][j], 1);
      if (i < argc - 1)
        write (STDOUT_FILENO, " ", 1);
    }
  write (STDOUT_FILENO, "\n", 1);
  return 0;
}
```

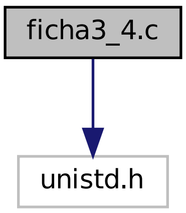
2.16 ficha3_3.c

```
#include <stdio.h>
#include <unistd.h>

int main (int argc, char *argv[])
{
  for (int i = 1; i < argc; i++)
    {
      for (int j = 0; argv[i][j] != 0; j++)
        write (STDOUT_FILENO, &argv[i][j], 1);
      if (i < argc - 1)
        write (STDOUT_FILENO, " ", 1);
    }
  write (STDOUT_FILENO, "\n", 1);
  return 0;
}
```

2.17 ficha3_4.c File Reference

```
#include <unistd.h>
```

Include dependency graph for ficha3_4.c:



Functions

- int main (int argc, char ∗argv[ ])

2.17.1 Function Documentation

2.17.1.1 main()

```
int main (
            int argc,
            char * argv[ ] )
```

Definition at line 3 of file ficha3_4.c.

```
00003                               {
00004   char *path = "/home/alef/Documents/coding/c/so/cmake-build-debug/./ficha3_3";
00005   execvp (path, argv);
00006   return 0;
00007 }
```

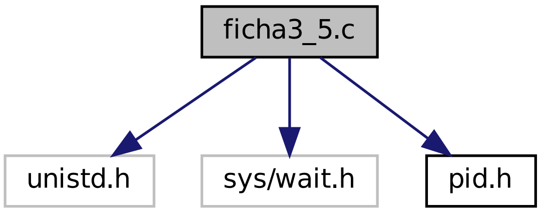
2.18 ficha3_4.c

```
00001 #include <unistd.h>
00002
00003 int main (int argc, char *argv[]){
00004   char *path = "/home/alef/Documents/coding/c/so/cmake-build-debug/./ficha3_3";
00005   execvp (path, argv);
00006   return 0;
00007 }
```

2.19 ficha3_5.c File Reference

```
#include <unistd.h>
#include <sys/wait.h>
#include "pid.h"
```

Include dependency graph for ficha3_5.c:



Functions

- int main (int argc, char ∗argv[ ])

2.19.1 Function Documentation

2.19.1.1 main()

```
int main (
            int argc,
            char ∗ argv[ ] )
```

Definition at line 8 of file ficha3_5.c.

```
{
  int status;
  for (int i = 1; i < argc; i++)
    {
      if (fork () == 0)
        {
          print_child_report();
          execlp (argv[i], argv[i], NULL);
          _exit (0);
        }
    }
  for (int i = 1; i < argc; i++)
    {
      wait (&status);
    }
  return 0;
}
```

References print_child_report().

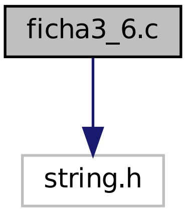
2.20 ficha3_5.c

```c
#include <unistd.h>
#include <sys/wait.h>
#include "pid.h"
// Implemente um programa que execute concorrentemente uma lista de executaveis especificados como
// argumentos da linha de comando. Considere os executaveis sem quaisquer argumentos próprios.
// O programa devera esperar pelo fim da execução de todos processos por si criados.

int main (int argc, char *argv[])
{
  int status;
  for (int i = 1; i < argc; i++)
    {
      if (fork () == 0)
        {
          print_child_report();
          execlp (argv[i], argv[i], NULL);
          _exit (0);
        }
    }
  for (int i = 1; i < argc; i++)
    {
      wait (&status);
    }
  return 0;
}
```

2.21 ficha3_6.c File Reference

```
#include <string.h>
```

Include dependency graph for ficha3_6.c:



Functions

- int main (char *command[ ])

2.21.1 Function Documentation

2.21.1.1 main()

```
int main (
            char * command[] )
```

Definition at line 4 of file ficha3_6.c.

```
00004                          {
00005   int fork_ret, exec_ret, wait_ret, status, res;
00006
00007   char *exec_args[1024];
00008   char*string;
00009   int i = 0;
00010
00011   string = strtok(command, " ");
00012   while (string != NULL){
00013     exec_args[i] = string;
00014   }
00015 }
```

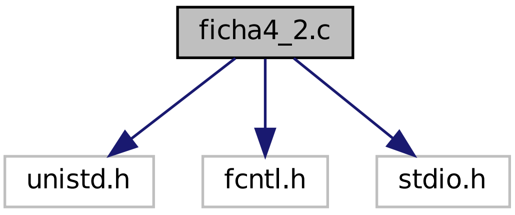
2.22 ficha3_6.c

```
00001 #include <string.h>
00002 // tirei foto, checar screenshot
00003
00004 int main(char* command[]){
00005   int fork_ret, exec_ret, wait_ret, status, res;
00006
00007   char *exec_args[1024];
00008   char*string;
00009   int i = 0;
00010
00011   string = strtok(command, " ");
00012   while (string != NULL){
00013     exec_args[i] = string;
00014   }
00015 }
```

2.23 ficha4_2.c File Reference

```
#include <unistd.h>
#include <fcntl.h>
#include <stdio.h>
```

Include dependency graph for ficha4_2.c:



Functions

- int main ()

2.23.1 Function Documentation

2.23.1.1 main()

```
int main ( )
```

Definition at line 5 of file ficha4_2.c.

```
00006 {
00007   int i_fd = open ("/etc/passwd", O_RDONLY);
00008   int o_fd = open ("saida.txt", O_CREAT | O_RDWR, 0666);
00009   int e_fd = open ("erros.txt", O_CREAT | O_RDWR, 0666);
00010
00011   dup2 (i_fd, STDIN_FILENO);
00012   dup2 (o_fd, STDOUT_FILENO);
00013   dup2 (e_fd, STDERR_FILENO);
00014
00015   close (i_fd);
00016   close (e_fd);
00017   close (o_fd);
00018
00019   int n_lines = 10;
00020   char buffer;
00021   char line[1024];
00022   int i = 0;
00023   while (n_lines > 0)
00024     {
00025       while (read (0, &buffer, 1) != 0)
00026         {
00027           line[i] = buffer;
00028           i++;
00029           if (buffer == '\n')
00030             {
00031               break;
00032             }
00033         }
00034       write (1, line, i);
00035       write (2, line, i);
00036       i = 0;
00037       n_lines--;
00038     }
00039   return 0;
00040 }
```

2.24 ficha4_2.c

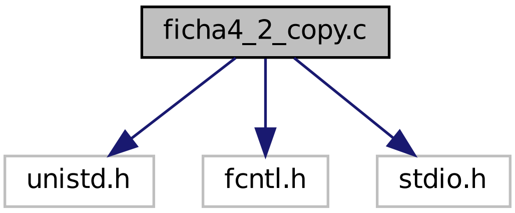
```
00001 #include <unistd.h>
00002 #include <fcntl.h>
00003 #include <stdio.h>
00004
00005 int main ()
00006 {
00007   int i_fd = open ("/etc/passwd", O_RDONLY);
00008   int o_fd = open ("saida.txt", O_CREAT | O_RDWR, 0666);
00009   int e_fd = open ("erros.txt", O_CREAT | O_RDWR, 0666);
00010
00011   dup2 (i_fd, STDIN_FILENO);
00012   dup2 (o_fd, STDOUT_FILENO);
00013   dup2 (e_fd, STDERR_FILENO);
00014
00015   close (i_fd);
00016   close (e_fd);
00017   close (o_fd);
00018
00019   int n_lines = 10;
00020   char buffer;
00021   char line[1024];
00022   int i = 0;
00023   while (n_lines > 0)
00024     {
00025       while (read (0, &buffer, 1) != 0)
00026         {
00027           line[i] = buffer;
00028           i++;
00029           if (buffer == '\n')
```

```
            {
              break;
            }
        }
      write (1, line, i);
      write (2, line, i);
      i = 0;
      n_lines--;
    }
  return 0;
}
```

2.25 ficha4_2_copy.c File Reference

```
#include <unistd.h>
#include <fcntl.h>
#include <stdio.h>
```

Include dependency graph for ficha4_2_copy.c:



Functions

- int main ()

2.25.1 Function Documentation

2.25.1.1 main()

```
int main ( )
```

Definition at line 5 of file ficha4_2_copy.c.

```
{
  printf("%u\n", S_IRUSR | S_IWUSR | S_IRGRP | S_IWGRP | S_IROTH);
  printf("%u\n", S_IRUSR);
  printf("%u\n",S_IWUSR );
  printf("%u\n", S_IRGRP );
  printf("%u\n",  S_IWGRP );
  printf ("%u\n", S_IROTH);
  int i_fd = open ("/etc/passwd", O_RDONLY);
  int o_fd = open ("saida.txt", O_CREAT | O_RDWR, 436);
  int e_fd = open ("erros.txt", O_CREAT | O_RDWR, 958);
  // 400 ^ 200 ^ ((400 ^ 200) » 3) ^ (400 »3 »3)
  // 666 = 436 = 958
  // -rw-rw-r--
  //int e_fd = open ("erros.txt", O_CREAT | O_RDWR, S_IRUSR | S_IWUSR | S_IRGRP | S_IWGRP | S_IROTH);
  //printf("%d\n", S_IRUSR | S_IWUSR | S_IRGRP | S_IWGRP | S_IROTH);
  dup2 (i_fd, STDIN_FILENO);
  dup2 (o_fd, STDOUT_FILENO);
  dup2 (e_fd, STDERR_FILENO);

  close (i_fd);
  close (e_fd);
  close (o_fd);

  int n_lines = 10;
  char c;
  for (int i = 0; i < n_lines;)
    {
      c = (char)getchar ();
      if (c == '\n')
        i++;
      putchar(c);
    }
  return 0;
}
```

2.26 ficha4_2_copy.c

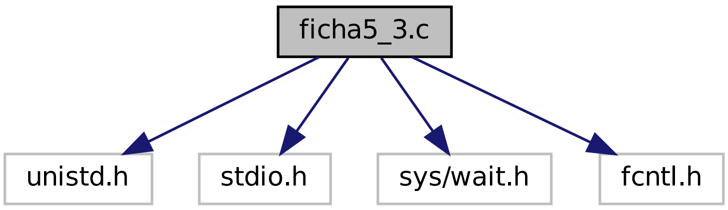
```
#include <unistd.h>
#include <fcntl.h>
#include <stdio.h>

int main ()
{
  printf("%u\n", S_IRUSR | S_IWUSR | S_IRGRP | S_IWGRP | S_IROTH);
  printf("%u\n", S_IRUSR);
  printf("%u\n",S_IWUSR );
  printf("%u\n", S_IRGRP );
  printf("%u\n",  S_IWGRP );
  printf ("%u\n", S_IROTH);
  int i_fd = open ("/etc/passwd", O_RDONLY);
  int o_fd = open ("saida.txt", O_CREAT | O_RDWR, 436);
  int e_fd = open ("erros.txt", O_CREAT | O_RDWR, 958);
  // 400 ^ 200 ^ ((400 ^ 200) » 3) ^ (400 »3 »3)
  // 666 = 436 = 958
  // -rw-rw-r--
  //int e_fd = open ("erros.txt", O_CREAT | O_RDWR, S_IRUSR | S_IWUSR | S_IRGRP | S_IWGRP | S_IROTH);
  //printf("%d\n", S_IRUSR | S_IWUSR | S_IRGRP | S_IWGRP | S_IROTH);
  dup2 (i_fd, STDIN_FILENO);
  dup2 (o_fd, STDOUT_FILENO);
  dup2 (e_fd, STDERR_FILENO);

  close (i_fd);
  close (e_fd);
  close (o_fd);

  int n_lines = 10;
  char c;
  for (int i = 0; i < n_lines;)
    {
      c = (char)getchar ();
      if (c == '\n')
        i++;
      putchar(c);
    }
  return 0;
}
```

2.27 ficha5_3.c File Reference

```
#include <unistd.h>
#include <stdio.h>
#include <sys/wait.h>
```

```
#include <fcntl.h>
```

Include dependency graph for ficha5_3.c:



Macros

- #define MAX_LINE_SIZE 1024

Functions

- ssize_t readln (int fildes, void ∗buf, size_t nbyte)
- int main (int argc, char ∗argv[ ])

2.27.1 Macro Definition Documentation

2.27.1.1 MAX_LINE_SIZE

```
#define MAX_LINE_SIZE 1024
```

Definition at line 6 of file ficha5_3.c.

2.27.2 Function Documentation

2.27.2.1 main()

```
int main (
            int argc,
            char * argv[ ] )
```

Definition at line 24 of file ficha5_3.c.

```
00024                                  {
00025
00026   ssize_t res = 0;
00027   int p[2];
00028   char buffer[MAX_LINE_SIZE];
00029   int pid;
00030   int status;
00031
00032   if (pipe(p) != 0) {
00033     perror("pipe");
00034     return -1;
00035   }
00036
00037   switch ((pid = fork())) {
00038     case -1: perror("fork");
00039       return -1;
00040     case 0: close(p[1]);
00041       dup2(p[0], 0);
00042       close(p[0]);
00043       res = execlp("wc", "wc", NULL);
00044       _exit(0);
00045
00046     default: close(p[0]);
00047       close(1);
00048
00049       while ((res = readln(0, buffer, MAX_LINE_SIZE)) > 0) {
00050         write(p[1], buffer, res);
00051       }
00052       close(p[1]);
00053
00054       if (wait(&status) < 0) {
00055         perror("wait");
00056         return -1;
00057       }
00058       if (status < 0) {
00059         perror("Filho");
00060       }
00061   }
00062   return 0;
00063 }
```

References MAX_LINE_SIZE, and readln().

2.27.2.2 readln()

```
ssize_t readln (
            int fildes,
            void * buf,
            size_t nbyte )
```

Definition at line 8 of file ficha5_3.c.

```
00008                                                  {
00009
00010   ssize_t res = 0;
00011   int i = 0;
00012
00013   while (i < nbyte && (res = read(fildes, &buf[i], 1)) > 0) {
00014
00015     if (((char *)buf)[i] == '\n') {
00016       return i + 1;
00017     }
00018     i += res;
00019   }
00020
00021   return i;
00022 }
```

Referenced by main().

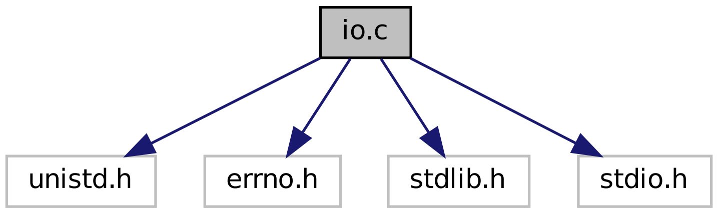
2.28 ficha5_3.c

```
#include <unistd.h>
#include <stdio.h>
#include <sys/wait.h>
#include <fcntl.h>

#define MAX_LINE_SIZE 1024

ssize_t readln(int fildes, void *buf, size_t nbyte) {

  ssize_t res = 0;
  int i = 0;

  while (i < nbyte && (res = read(fildes, &buf[i], 1)) > 0) {

    if (((char *)buf)[i] == '\n') {
      return i + 1;
    }
    i += res;
  }

  return i;
}

int main(int argc, char *argv[]) {

  ssize_t res = 0;
  int p[2];
  char buffer[MAX_LINE_SIZE];
  int pid;
  int status;

  if (pipe(p) != 0) {
    perror("pipe");
    return -1;
  }

  switch ((pid = fork())) {
    case -1: perror("fork");
      return -1;
    case 0: close(p[1]);
      dup2(p[0], 0);
      close(p[0]);
      res = execlp("wc", "wc", NULL);
      _exit(0);

    default: close(p[0]);
      close(1);

      while ((res = readln(0, buffer, MAX_LINE_SIZE)) > 0) {
        write(p[1], buffer, res);
      }
      close(p[1]);

      if (wait(&status) < 0) {
        perror("wait");
        return -1;
      }
      if (status < 0) {
        perror("Filho");
      }
  }
  return 0;
}
```

2.29 io.c File Reference

```
#include <unistd.h>
#include <errno.h>
#include <stdlib.h>
#include <stdio.h>
```

Include dependency graph for io.c:



Functions

- char ∗ readln (int fd, ssize_t max)
- char ∗ convert_argv_to_v (int argc, char ∗argv[ ], int max)

2.29.1 Function Documentation

2.29.1.1 convert_argv_to_v()

```
char* convert_argv_to_v (
            int argc,
            char * argv[ ],
            int max )
```

Definition at line 21 of file io.c.

```
{
  char static new[2048];
  int c = 0;
  for (int i = 0; i < max; i++)
  {
    for (int j = 0; argv[i][j] != 0; j++)
      new[c++] = argv[i][j];
    if (i < argc - 1)
      new[c++] = ' ';
  }
  new[c] = 0;
  return new;
}
```

2.29.1.2 readln()

```
char* readln (
            int fd,
            ssize_t max )
```

Definition at line 6 of file io.c.

```
                                       {
  char b;
  char static new[2048];
  unsigned long c = 0;
  long l = 0;
  long r;
  while ((r = read(fd,&b,1)) == -1 && errno==EINTR){
    new[c++] = b;
    if (b == '\n'){
      break;
    }
  }
  return realloc(new,c);
}
```

2.30 io.c

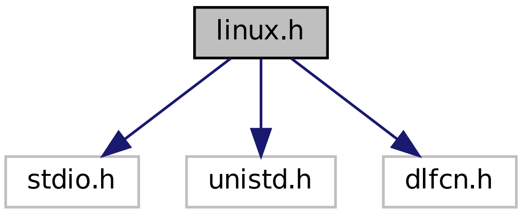
```
#include <unistd.h>
#include <errno.h>
#include <stdlib.h>
#include <stdio.h>

char* readln(int fd, ssize_t max){
  char b;
  char static new[2048];
  unsigned long c = 0;
  long l = 0;
  long r;
  while ((r = read(fd,&b,1)) == -1 && errno==EINTR){
    new[c++] = b;
    if (b == '\n'){
      break;
    }
  }
  return realloc(new,c);
}

char *convert_argv_to_v (int argc, char *argv[], int max)
{
  char static new[2048];
  int c = 0;
  for (int i = 0; i < max; i++)
  {
    for (int j = 0; argv[i][j] != 0; j++)
      new[c++] = argv[i][j];
    if (i < argc - 1)
      new[c++] = ' ';
  }
  new[c] = 0;
  return new;
}
```

2.31 linux.h File Reference

```
#include <stdio.h>
#include <unistd.h>
```

```
#include <dlfcn.h>
```

Include dependency graph for linux.h:



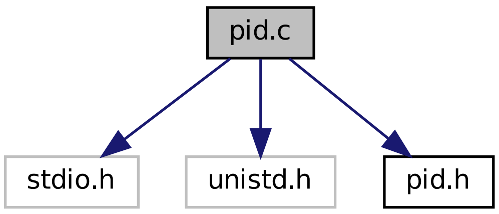
2.32 linux.h

```
#ifndef _LINUX_H_
#define _LINUX_H_
#include <stdio.h>
#include <unistd.h>
#include <dlfcn.h>

#endif //_LINUX_H_
```

2.33 pid.c File Reference

```
#include <stdio.h>
#include <unistd.h>
#include "pid.h"
```

Include dependency graph for pid.c:



Functions

- int print_pid (void)
- int print_father (void)
- int print_child_report (void)
- int print_father_report (pid_t pid, int exit_code)

2.33.1 Function Documentation

2.33.1.1 print_child_report()

```
int print_child_report (
            void  )
```

Definition at line 15 of file pid.c.

```
00016 {
00017       fprintf (stderr, "My father’s PID: %d\nMy PID: %d\n", getppid (), getpid ());
00018   return 0;
00019 }
```

Referenced by main().

2.33.1.2 print_father()

```
int print_father (
            void  )
```

Definition at line 10 of file pid.c.

```
00011 {
00012   printf ("My father’s PID: %d\n", getppid ());
00013   return 0;
00014 }
```

2.33.1.3 print_father_report()

```
int print_father_report (
            pid_t pid,
            int exit_code )
```

Definition at line 21 of file pid.c.

```
00022 {
00023   fprintf (stderr, "Filho %d saiu com código %d\n", pid, exit_code);
00024   return 0;
00025 }
```

2.33.1.4 print_pid()

```
int print_pid (
            void  )
```

Definition at line 5 of file pid.c.

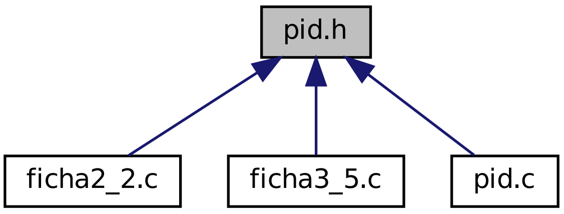
```
00006 {
00007   printf ("My PID: %d\n", getpid ());
00008   return 0;
00009 }
```

2.34 pid.c

```
#include <stdio.h>
#include <unistd.h>
#include "pid.h"

int print_pid (void)
{
  printf ("My PID: %d\n", getpid ());
  return 0;
}
int print_father (void)
{
  printf ("My father’s PID: %d\n", getppid ());
  return 0;
}
int print_child_report (void)
{
      fprintf (stderr, "My father’s PID: %d\nMy PID: %d\n", getppid (), getpid ());
  return 0;
}

int print_father_report (pid_t pid, int exit_code)
{
  fprintf (stderr, "Filho %d saiu com código %d\n", pid, exit_code);
  return 0;
}
```

2.35 pid.h File Reference

This graph shows which files directly or indirectly include this file:



Functions

- int print_pid (void)
- int print_father (void)
- int print_child_report (void)
- int print_father_report (pid_t, int)

2.35.1 Function Documentation

2.35.1.1 print_child_report()

```
int print_child_report (
             void  )
```

Definition at line 15 of file pid.c.

```
00016 {
00017      fprintf (stderr, "My father's PID: %d\nMy PID: %d\n", getppid (), getpid ());
00018   return 0;
00019 }
```

Referenced by main().

2.35.1.2 print_father()

```
int print_father (
             void  )
```

Definition at line 10 of file pid.c.

```
00011 {
00012   printf ("My father's PID: %d\n", getppid ());
00013   return 0;
00014 }
```

2.35.1.3 print_father_report()

```
int print_father_report (
             pid_t ,
             int   )
```

Definition at line 21 of file pid.c.

```
00022 {
00023   fprintf (stderr, "Filho %d saiu com código %d\n", pid, exit_code);
00024   return 0;
00025 }
```

2.35.1.4 print_pid()

```
int print_pid (
             void  )
```

Definition at line 5 of file pid.c.

```
00006 {
00007   printf ("My PID: %d\n", getpid ());
00008   return 0;
00009 }
```

2.36 pid.h

```
00001 #ifndef _PID_H_
00002 #define _PID_H_
00003 int print_pid (void);
00004 int print_father (void);
00005 int print_child_report (void);
00006 int print_father_report (pid_t, int);
00007 #endif //_PID_H_
```

Index