

ELEC 377 – Operating Systems

Tutorial / Lab 1 Introduction

Pointers to functions

- In Java, you passed an object to have another function call you back

```
class foo implements ActionListener{
    void action(){
        ...
    }
    void init(){
        ...
        panel.addListener(this);
    }
}
```

Pointers to functions

- In C, no object instances with methods to pass.
 - ◇ instead we pass a pointer to a function
 - ◇ a function name by itself is a constant pointer

```
int lt(int x, int y) { return x < y; }
```

```
int (*f)(int,int); // f is a function with 2 int parms  
                  // and returns int
```

```
int main(){  
    f = lt;  
    printf(“%d\n”,    (*f)(2,3)    ); // prints number 1  
}
```

Pointers to functions

- Brackets important!!!!

$*f(2,3)$ -> call function named f with the parameters 2 and 3 and treat the result as a pointer and dereference the pointer

$(*f)(2,3)$ -> use f as a pointer to a function and call with the parameters 2 and 3

Lab 1 main program

```
int main(){
    struct dirent **namelist;
    int n;

    n = scandir("/proc", &namelist,
                isProcessDir, NULL);

    ....
}
```

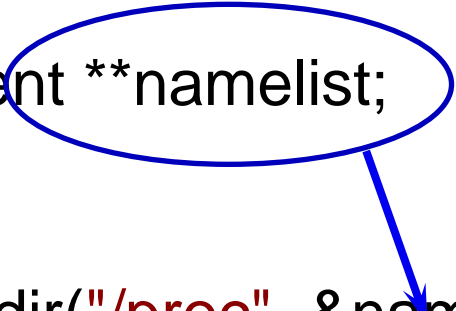
Lab 1 main program

```
int main(){
    struct dirent **namelist;
    int n;

    n = scandir("/proc", &namelist,
                isProcessDir, NULL);

    ....
}
```

*array of pointers
to struct dirent*



Lab 1 main program

```
int main(){
    struct dirent **namelist;
    int n;

    n = scandir("/proc", &namelist,
        isProcessDir, NULL);

    ....
}
```

Lab 1

```
int isProcessDir(const struct dirent* d){  
    ... return 1 if a process, 0 if not a process...  
    ... i.e. all characters of the name  
                                     (d->d_name are digits...)  
}
```


Lab 1 main program

```
int main(){
    struct dirent **namelist;
    int n;

    n = scandir("/proc", &namelist,

                isProcessDir, NULL);

    .... use namelist[i]->d_name ....
    ... string concatenation (status) ....
    .... open file and read info.
}
```

Lab1

- Do the lab iteratively
 - start by writing the `isProcessdir` function and print `d_name` fields of the `namelist`.
 - Then do the string concatenation and print the resulting file names
 - Then open the files to get and print the information.
- Links to tutorials for the following editors are on the website: `jed`, `joe`, `vi`