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1  #include <stdio.h>
2  #include <stdlib.h>
3  #include <string.h>
4  #include <unistd.h>
5  #include <ctype.h>
6  #include <errno.h>
7  #include <sys/types.h>
8  #include <sys/wait.h>
9  #include <sys/stat.h>
10
11 #define BLUE "\033[0;34m"
12 #define GREEN "\033[0;32m"
13 #define RED "\033[0;31m"
14 #define RESET "\033[0m"
15 #define SCRIPT_NAME "uefi_stub_gen_output.sh"
16
17 void usage(const char *prog_name) {
18     printf("Usage: %s\n", prog_name);
19     printf("This is a simple interactive tool to automatically generate UEFI boot entries.\n");
20     printf("It generates efibootmgr commands and exports them to a small executable.\n");
21     printf("No changes will be written to disk before confirmation.\n");
22     printf("The EFI partition must be mounted to /boot and the kernel and initramfs image must be located at the root of it!\n");
23     printf("Some UEFI systems don't allow to create more than one EFI STUB entry.\n");
24     printf("Unfortunately, efibootmgr is not able to change EFI entries. You always have to delete/overwrite entries to make changes happen.\n");
25     printf("Please don't use this program if you don't exactly know what you are doing here and what EFI STUB means.\n");
26     printf("You can get some great info at: https://wiki.archlinux.org/title/EFISTUB\n");
27     printf("And now good luck with EFI STUB booting.\n");
28     printf("Options:\n");
29     printf("    -h, --help        Display this help message\n");
30 }
31
32 void execute_command(const char *cmd) {
33     int status = system(cmd);
34     if (status == -1) {
35         printf("%sError: Failed to execute command: %s\n", RED, strerror(errno), RESET);
36     } else if (WIFEXITED(status) && WEXITSTATUS(status) != 0) {
37         printf("%sError: Command exited with status %d.\n", RED, WEXITSTATUS(status), RESET);
38     } else {
39         printf("%sCommand executed successfully.\n", GREEN, RESET);
40     }
41 }
42
43 char* get_uuid(const char *device) {
44     char cmd[512];
45     snprintf(cmd, sizeof(cmd), "blkid -o value -s UUID %s", device);
46     FILE *fp = popen(cmd, "r");
47     if (!fp) {
48         return NULL;
49     }
50
51     char *uuid = malloc(256);
52     if (!uuid) {
53         pclose(fp);
54         return NULL;
55     }
56
57     if (fgets(uuid, 256, fp) != NULL) {
58         uuid[strcspn(uuid, "\n")] = '\0';
59     }
60     pclose(fp);
61     return uuid[0] ? uuid : NULL;
62 }
63
64 char* get_device_for_mountpoint(const char *mountpoint) {
65     static char device[256];
66     char cmd[512];
67
68     snprintf(cmd, sizeof(cmd), "findmnt -n -o SOURCE %s", mountpoint);
69     FILE *fp = popen(cmd, "r");
70     if (!fp) {
71         return NULL;
72     }
73
74     if (fgets(device, sizeof(device), fp) != NULL) {
75         device[strcspn(device, "\n")] = '\0';
76     }
77     pclose(fp);
78     return device[0] ? device : NULL;
79 }
80
81 int main(int argc, char *argv[]) {
82     if (geteuid() != 0) {
83         printf("%sThis script must be run with root privileges!\n", RED, RESET);
84         printf("type: sudo %s -h for usage and more info.\n", argv[0]);
85         return 1;
86     }
87
88     if (argc > 1) {
89         if (strcmp(argv[1], "-h") == 0 || strcmp(argv[1], "--help") == 0) {
90             usage(argv[0]);
91             return 0;
92         } else {
93             printf("Unknown option: %s\n", argv[1]);
94             usage(argv[0]);
95             return 1;
96         }
97     }
98
99     char choice;
100     printf("%sWelcome to LUSC - A Linux UEFI STUB Creator\n", BLUE);
101     printf("-----\n");
102     printf("Start creating UEFI boot entries? (y/N) ");
103     if (scanf(" %c", &choice) != 1) {
104         printf("%sError reading input. Exiting.\n", RED, RESET);
105     }

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105     return 1;
106 }
107 choice = tolower(choice);
108
109 if (choice != 'y') {
110     printf("Goodbye. Exiting...\n");
111     return 0;
112 }
113
114 char efi_partition[256];
115 printf("Please specify EFI partition (e.g., /dev/nvme0n1p1): ");
116 if (scanf("%255s", efi_partition) != 1) {
117     printf("%sError reading EFI partition. Exiting.%s\n", RED, RESET);
118     return 1;
119 }
120
121 char root_partition[256];
122 printf("Please specify root partition (e.g., /dev/nvme0n1p2): ");
123 if (scanf("%255s", root_partition) != 1) {
124     printf("%sError reading root partition. Exiting.%s\n", RED, RESET);
125     return 1;
126 }
127
128 char blkid_cmd[512];
129 snprintf(blkid_cmd, sizeof(blkid_cmd), "blkid | grep -q %s", efi_partition);
130 if (system(blkid_cmd) != 0) {
131     printf("%sError: EFI partition '%s' not found!%s\n", RED, efi_partition, RESET);
132     return 1;
133 }
134
135 snprintf(blkid_cmd, sizeof(blkid_cmd), "blkid | grep -q %s", root_partition);
136 if (system(blkid_cmd) != 0) {
137     printf("%sError: Root partition '%s' not found!%s\n", RED, root_partition, RESET);
138     return 1;
139 }
140
141 char efi_disk[256];
142 char efi_part_num[256];
143 if (strstr(efi_partition, "/dev/nvme") == efi_partition) {
144     sscanf(efi_partition, "%[^p]p%s", efi_disk, efi_part_num);
145 } else {
146     sscanf(efi_partition, "%[^0-9]%s", efi_disk, efi_part_num);
147 }
148
149 char boot_label[256];
150 printf("Please specify the label for the boot entry (e.g., Arch Linux): ");
151 if (scanf("%255s", boot_label) != 1) {
152     printf("%sError reading boot label. Exiting.%s\n", RED, RESET);
153     return 1;
154 }
155
156 char *efi_uuid = get_uuid(efi_partition);
157 if (!efi_uuid) {
158     printf("%sError retrieving UUID for EFI partition.%s\n", RED, RESET);
159     return 1;
160 }
161
162 char *root_uuid = get_uuid(root_partition);
163 if (!root_uuid) {
164     printf("%sError retrieving UUID for root partition.%s\n", RED, RESET);
165     free(efi_uuid); // Free allocated memory before returning
166     return 1;
167 }
168
169 char default_params[512];
170 snprintf(default_params, sizeof(default_params), "root=UUID=%s rw", root_uuid);
171
172 char extra_params[512] = {0};
173 printf("Current kernel parameters: %s\n", default_params);
174 printf("%sinitrd and initrd-fallback will be added automatically!%s\n", GREEN, RESET);
175 printf("Add additional kernel parameters (or press Enter to keep current): ");
176 getchar(); // To consume the newline character left by the previous scanf
177 if (fgets(extra_params, sizeof(extra_params), stdin)) {
178     extra_params[strcspn(extra_params, "\n")] = '\0';
179 }
180
181 char kernel_params[1024];
182 if (strlen(extra_params) > 0) {
183     snprintf(kernel_params, sizeof(kernel_params), "%s %s", default_params, extra_params);
184 } else {
185     snprintf(kernel_params, sizeof(kernel_params), "%s", default_params);
186 }
187
188 const char *initramdisk = "\\initramfs-linux.img";
189 const char *initfallback = "\\initramfs-linux-fallback.img";
190
191 char linux_cmd[1024];
192 char fallback_cmd[1024];
193 snprintf(linux_cmd, sizeof(linux_cmd),
194     "efibootmgr --create --disk %s --part %s --label \"%s\" --loader /vmlinuz-linux --unicode \"%s initrd=%s\" --verbose",
195     efi_disk, efi_part_num, boot_label, kernel_params, initramdisk);
196 snprintf(fallback_cmd, sizeof(fallback_cmd),
197     "efibootmgr --create --disk %s --part %s --label \"%s (Fallback)\" --loader /vmlinuz-linux --unicode \"%s initrd=%s\" --verbose",
198     efi_disk, efi_part_num, boot_label, kernel_params, initfallback);
199
200 printf("Detected partitions:\n");
201 printf("EFI: %s (%s)\n", efi_partition, efi_uuid);
202 printf("Root: %s (%s)\n", root_partition, root_uuid);
203 printf("\nComposed commands:\n");
204 printf("%s\n", linux_cmd);
205 printf("%s\n", fallback_cmd);
206
207 char action;
208 printf("\nCreate executable only, create and execute (sets UEFI boot entries), or abort? (c/ce/a) ");
209 if (scanf(" %c", &action) != 1) {

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210     printf("%sError reading action choice. Exiting.%s\n", RED, RESET);
211     free(efi_uuid); // Free allocated memory before returning
212     free(root_uuid); // Free allocated memory before returning
213     return 1;
214 }
215 action = tolower(action);
216
217 FILE *script_fp = fopen(SCRIPT_NAME, "w");
218 if (script_fp == NULL) {
219     printf("%sError: Unable to create script file: %s%s\n", RED, strerror(errno), RESET);
220     free(efi_uuid); // Free allocated memory before returning
221     free(root_uuid); // Free allocated memory before returning
222     return 1;
223 }
224
225 fprintf(script_fp, "#!/bin/bash\n");
226 fprintf(script_fp, "# Generated UEFI boot entries by LUSC\n");
227 fprintf(script_fp, "%s\n", fallback_cmd);
228 fprintf(script_fp, "%s\n", linux_cmd);
229 fprintf(script_fp, "exit 0\n");
230 fclose(script_fp);
231 chmod(SCRIPT_NAME, S_IRWXU | S_IRGRP | S_IXGRP | S_IROTH | S_IXOTH);
232
233 printf("Script file '%s' created.\n", SCRIPT_NAME);
234
235 if (action == 'c') {
236     printf("Executable created. Exiting...\n");
237 } else if (action == "ce") {
238     printf("Executing script...\n");
239     execute_command(SCRIPT_NAME);
240 } else {
241     printf("Aborted. Exiting...\n");
242 }
243
244 free(efi_uuid); // Free allocated memory before returning
245 free(root_uuid); // Free allocated memory before returning
246 return 0;
247 }

```