```
 1    ###############################################################################
 2    # Makefile                                                                    #
 3    #                                                                             #
 4    # Builds the emqbit benchmark source for ARM and DSP                          #
 5    ###############################################################################
 6    #
 7    #
 8    ###############################################################################
 9    #                                                                             #
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12    #                                                                             #
13    ###############################################################################
14    #
15    #
16    ###############################################################################
17    #                                                                             #
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45    #                                                                             #
46    ###############################################################################
47
48
49    #  -------------------------------------------------------------------------
50    #   Name of the ARM GCC cross compiler & archiver
51    #  -------------------------------------------------------------------------
52    ARM_TOOLCHAIN_PREFIX  ?= arm-none-linux-gnueabi-
53    ifdef ARM_TOOLCHAIN_PATH
54    ARM_CC := $(ARM_TOOLCHAIN_PATH)/bin/$(ARM_TOOLCHAIN_PREFIX)gcc
```

```makefile
55    ARM_AR := $(ARM_TOOLCHAIN_PATH)/bin/$(ARM_TOOLCHAIN_PREFIX)ar
56    else
57    ARM_CC := $(ARM_TOOLCHAIN_PREFIX)gcc
58    ARM_AR := $(ARM_CROSS_COMPILE)ar
59    endif
60
61    # Get any compiler flags from the environment
62    ARM_CFLAGS = $(CFLAGS)
63    ARM_CFLAGS += -std=gnu99 \
64    -Wdeclaration-after-statement -Wall -Wno-trigraphs \
65    -fno-strict-aliasing -fno-common -fno-omit-frame-pointer \
66    -c -O3
67    ARM_LDFLAGS = $(LDFLAGS)
68    ARM_LDFLAGS+=-lm -lpthread
69    ARM_ARFLAGS = rcs
70
71    #   -------------------------------------------------------------------------
72    #   Name of the DSP C6RUN compiler & archiver
73    #   TI C6RunLib Frontend (if path variable provided, use it, otherwise assume
74    #   the tools are in the path)
75    #   -------------------------------------------------------------------------
76    C6RUN_TOOLCHAIN_PREFIX=c6runlib-
77    ifdef C6RUN_TOOLCHAIN_PATH
78    C6RUN_CC := $(C6RUN_TOOLCHAIN_PATH)/bin/$(C6RUN_TOOLCHAIN_PREFIX)cc
79    C6RUN_AR := $(C6RUN_TOOLCHAIN_PATH)/bin/$(C6RUN_TOOLCHAIN_PREFIX)ar
80    else
81    C6RUN_CC := $(C6RUN_TOOLCHAIN_PREFIX)cc
82    C6RUN_AR := $(C6RUN_TOOLCHAIN_PREFIX)ar
83    endif
84
85    C6RUN_CFLAGS = -c -O3
86    C6RUN_ARFLAGS = rcs --C6Run:replace_malloc
87
88
89    #   -------------------------------------------------------------------------
90    #   List of source files
91    #   -------------------------------------------------------------------------
92    EXEC_SRCS := main_cfft.c main_bench.c
93    EXEC_ARM_OBJS := $(EXEC_SRCS:%.c=gpp/%.o)
94    EXEC_DSP_OBJS := $(EXEC_SRCS:%.c=dsp/%.o)
95
96    LIB_SRCS := cfft.c distance.c
97    LIB_ARM_OBJS := $(LIB_SRCS:%.c=gpp_lib/%.o)
98    LIB_DSP_OBJS := $(LIB_SRCS:%.c=dsp_lib/%.o)
99
100   #   -------------------------------------------------------------------------
101   #   Makefile targets
102   #   -------------------------------------------------------------------------
103   .PHONY : dsp_exec gpp_exec dsp_lib gpp_lib dsp_clean gpp_clean all clean
104
105   all: dsp_exec gpp_exec
106   clean: gpp_clean dsp_clean
107
108
```

```
109   gpp_exec: gpp/.created gpp_lib $(EXEC_ARM_OBJS)
110       $(ARM_CC) $(ARM_LDFLAGS) $(CINCLUDES) -o bench_arm gpp/main_bench.o bench_arm.lib
111       $(ARM_CC) $(ARM_LDFLAGS) $(CINCLUDES) -o cfft_arm gpp/main_cfft.o cfft_arm.lib
112
113   gpp_lib: gpp_lib/.created $(LIB_ARM_OBJS)
114       $(ARM_AR) $(ARM_ARFLAGS) bench_arm.lib gpp_lib/distance.o
115       $(ARM_AR) $(ARM_ARFLAGS) cfft_arm.lib gpp_lib/cfft.o
116
117   gpp/%.o : %.c
118       $(ARM_CC) $(ARM_CFLAGS) $(CINCLUDES) -o $@ $<
119
120   gpp_lib/%.o : %.c
121       $(ARM_CC) $(ARM_CFLAGS) $(CINCLUDES) -o $@ $<
122
123   gpp/.created:
124       @mkdir -p gpp
125       @touch gpp/.created
126
127   gpp_lib/.created:
128       @mkdir -p gpp_lib
129       @touch gpp_lib/.created
130
131   gpp_clean:
132       @rm -Rf bench_arm cfft_arm bench_arm.lib cfft_arm.lib
133       @rm -Rf gpp gpp_lib
134
135
136   dsp_exec: dsp/.created dsp_lib $(EXEC_DSP_OBJS)
137       $(ARM_CC) $(ARM_LDFLAGS) $(CINCLUDES) -o bench_dsp dsp/main_bench.o bench_dsp.lib
138       $(ARM_CC) $(ARM_LDFLAGS) $(CINCLUDES) -o cfft_dsp dsp/main_cfft.o cfft_dsp.lib
139
140   dsp_lib: dsp_lib/.created $(LIB_DSP_OBJS)
141       $(C6RUN_AR) $(C6RUN_ARFLAGS) bench_dsp.lib dsp_lib/distance.o
142       $(C6RUN_AR) $(C6RUN_ARFLAGS) cfft_dsp.lib dsp_lib/cfft.o
143
144   dsp/%.o : %.c
145       $(ARM_CC) $(ARM_CFLAGS) $(CINCLUDES) -o $@ $<
146
147   dsp_lib/%.o : %.c
148       $(C6RUN_CC) $(C6RUN_CFLAGS) $(CINCLUDES) -o $@ $<
149
150   dsp/.created:
151       @mkdir -p dsp
152       @touch dsp/.created
153
154   dsp_lib/.created:
155       @mkdir -p dsp_lib
156       @touch dsp_lib/.created
157
158   dsp_clean:
159       @rm -Rf bench_dsp cfft_dsp bench_dsp.lib cfft_dsp.lib
160       @rm -Rf dsp dsp_lib
161
```