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CISC361
Instructor: Matthew Mauriello
HW2

1- Using Amdahl's Law, calculate the speedup gain of an application that has a 60 percent parallel component for (a) two processing cores and (b) four processing cores. (20pt)

1/.6+(.4)/2 = 1.25 1/.6+(.4)/4) = 1.429

2- The program shown below uses the Pthreads API. What would be the output from the program at LINE C and LINE P? (40pt)

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

#include <types.h>

int value = 0;
void *runner(void *param); /* the thread */

int main(int argc, char *argv[])
{
pid_t pid;
pthread_t tid;
pthread_attr_t attr;

   pid = fork();

   if (pid == 0) { /* child process */
      pthread_attr_init(&attr);
      pthread_create(&tid,&attr,runner,NULL);
      pthread_join(tid,NULL);
      printf("CHILD: value = %d",value); /* LINE C */
   }
   else if (pid > 0) { /* parent process */
      wait(NULL);
      printf("PARENT: value = %d",value); /* LINE P */
   }
}

void *runner(void *param) {
   value = 5;
   pthread_exit(0);
}
```

5

0

3- Extra credit (20pt). Implement the above program and check your results. Please provide the necessary files and screenshots of outputs.