Q1 (60 pts)	Q2 (40 pts)	Sum (100 pts)

Name:
No:
Signature:

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No questions allowed --- 40 mins.
(Page 1)

Program code for Question 1:

```
< Assume that required include files are included here >

#define COUNT 2
#define MAX 4

int main (void)
{
      int i, ctr;
      pid_t flist[MAX], tmp;

      for (i=0; i<MAX; i++)
            flist[i]=0;

      for (ctr=0; ctr<COUNT; ctr++) {
            tmp=fork();
            if (tmp > 0)
                  flist[ctr]=tmp;
            else
                  break;
      }

      printf("My pid = %d. My parent pid = %d. My value of ctr = %d\n",
                  getpid(), getppid(), ctr);

      for (i=0; i<MAX; i++)
            printf("(pid=%d): flist[%d]=%d\n", getpid(), i, flist[i]);

      if (tmp>0) {
            wait(NULL);
            printf("(pid=%d): Finished ...\n", getpid());
      }
      return (0);
}
```

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Program code for Question 2:

```
< Assume that required include files are included here >


int main (void)
{
      pid_t f;
      int *ptr = (int *) malloc (sizeof(int));

      *ptr=1;
      f=fork();
      *ptr= *ptr+2;
      printf("Process id=%d, Adress=%p, Value=%d\n", getpid(), ptr, *ptr);

      if (f>0) {
            *ptr=*ptr+3;
            printf("Process id=%d, Adress=%p, Value=%d\n", getpid(), ptr, *ptr);
            free(ptr);
            wait(NULL);
      }

      else {
            *ptr=*ptr+2;
            printf("Process id=%d, Adress=%p, Value=%d\n", getpid(), ptr, *ptr);
      }

      return(0);
}
```

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Signature:

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Question 1. Give an example output that will be printed when the program for Question 1 is executed? Explain.

Notes:
1. You can choose appropriate process id numbers for the processes.
2. Remember to indicate which process id number you chose corresponds to which process.
3. You can assume no errors occur during process creation.

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Question 2.
(a) Give an example output that will be printed when the program for Question 2 is executed? Explain.
(b) Has all allocated memory locations been properly freed? Explain.

Notes:
1. You can choose appropriate process id numbers for the processes.
2. Remember to indicate which process id number you chose corresponds to which process.
3. You can assume no errors occur during process creation.