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Instructions

This quiz is graded against **100 points total** with exactly 100 points allotted to the questions. You are to **write legibly and show all workings** to derive your answers. Write in the given answer spaces below each question. Do assist by **marking "//" at your final answer** of each question to assist with grading. You may assume that all necessary includes are present for all questions.

Given a struct named "IntNode" that contain members "value" (integer) & "next" (struct IntNode*) which is used in a linked-list. Write a function named AddIntToListBack that takes in a pointer to an IntNode pointer and a new value integer. The function will create and insert a new node with the new value to the end of the linked-list. The function returns void. [40 marks]

Answer:

```
void AddIntToListBack ( IntNode **ptr , int value )
{
  struct IntNode * current = NULL;
  struct IntNode * newNode = NULL;
  newNode = (IntNode *) malloc (sizeof (IntNode));
  if (newNode == NULL)
  {
    return;
  }
  newNode -> next = NULL;
  newNode -> value = value;
  current = ptr;
  while ( current -> next != NULL)
  {
    current = current -> next;
    current -> next = newNode;
  }
  current = current -> next;
}

if ( *ptr == NULL)
{
  *ptr = newNode;
  return;
}

if (ptr == NULL)
{
  return;
}
}
```

-1 -1 X -5

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Write a function named StringCopy that takes in a constant char pointer (source) and returns a char pointer. The function will allocate memory and copies the source string, then returns the copied string. String copy functions (eg. strcpy, strncpy) are not allowed in your answer. [30 marks]

Answer:

```
char * StringCopy ( const char * source )
{
    char * dest = NULL;
    if ( source == NULL)
    {
      return NULL;
    }
    dest = (char *) malloc ( sizeof (char) * ( strlen ( source) + 1));
    while (*source)
    {
      *dest ++ = *sour ++;
    }
    dest [strlen (sour)] = 0;

    return dest;
}
```

-1

-2 You are returning the tail end of string!

Write a function named ArrayMultiply that takes in an integer pointer (result), a constant integer pointer (other), and an integer value (length). The function will take in two arrays of integers of equal length, multiply each index pair, and write the result to the result array. This function returns void. [30 marks]

Answer:

```
void ArrayMultiply ( int * result, const int * other, int length )
{
    int i=0;
    if (result == NULL || other == NULL)
    {
      return;
    }
    if ( length <= 0)
    {
      return;
    }
    for ( i=0; i < length ; ++i)
    {
      result[i] = result[i] * other[i];
    }

}
```


-3