《多媒体技术》大作业

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题目要求:

把视频里面的数据变为表格形式,存储在 csv 中,选择第1类题目的,每一个 时间段为一行,第一个元素是时间,之后是第一个的名字,对应的值(百分 比,绝对值),然后第二个,第三个,有几个写几个。

time, No1_name, Value, No2_name, Value, No2_name, Value

解:

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一:核心算法原理

1 提取关键帧:

这里采用的方法是提取每一帧的时间,位置在图片的右下角,原图片为 1280*720, 这里提取【800: 1280, 560: 720】作为该帧的时间图片, 之后 每一帧的时间图片都与前一帧的时间图片进行相似度比较,相似度差别大的 说明该帧是一个季度的第一帧,然后把这张图保存下来。

2. 之后调用百度 OCR 接口, 进行识别, 这里实验了四种图片进行返回, 原图 片, 宽和高都放大了两倍的图片, 二值图像, 灰度图, 选择识别效果最好的 返回。

返回的数据进行处理之后写入 csv 文件。

二:详细处理步骤解析

1. 读入视频,将每一帧取出来:

```
videopath = 'Most_Popular_Programming_Languages_1965_-_2019.mp4'
# Directory to store the processed frames
dir = './extract_result/'
print("target video :" + videopath)
print("frame save directory: " + dir)
# load video and compute diff between frames
cap = cv2.VideoCapture(str(videopath))
curr_frame = None
prev_frame = None
frame_coor = []
frames = []
# keyframe_id_set = set()
start_time = time.time()
success, frame = cap.read()
```

之后取每一张图的右下角时间部分:

```
frame_yeartime = frame[560:, 800:, :]
```

最后将相邻两个图片用皮尔逊系数进行比较,设置阈值 0.99, 小于此值说明 是一个季度的第一帧,然后保存下来:

```
while (success):
    luw = cv2.cvtColor(frame_yeartime, cv2.CoLoR_BGR2LUV)
    curr_frame = luw
    if curr_frame is not None and prev_frame is not None:
        # logic here
        img0 = curr_frame.reshape(curr_frame.size, order='C') # 将矩阵转换成向量。按行转换成向量,第一个参数就是矩阵元素的个数
        img1 = prev_frame.reshape(prev_frame.size, order='C')

# corr = np.corrcoef(img0, img0)[0, 1]

corr = peardorn(img0, img1)[0]

if corr <= THREADHOLD:
        # keyframe_id_set.add(i-1)
        print(i)
        # rgb = cv2.cvtColor(frame, cv2.COLOR_LUV2BGR)
        name = str(i) + ".jpg"
        cv2.imwrite(dir + name, frame)

prev_frame = curr_frame
    i = i + 1
    frame_yeartime = frame[580:, 800:, :]
    success, frame = cap.read()
```

2. 首先遍历该文件夹,依次读取图片:

```
if name == 'main';

path='extract_result'

allimgs=os.listdir(path)

allimgs.sort(key=lambda x: int(x.split('.')[0])) # 排序

for img in allimgs:

print("处理%s中....." % img)
```

将原图像和灰度图像都进行识别,选取返回数量长的字符串进行写入 csv 文件。由于结尾几张图片识别不出来信息,则程序结束。

其中 Recognise 函数如下:

```
def Recognise (img_path, imgtype):
   :param imgtype: 输入图片类型,1为RGB,2为灰度图或二值图
   cap = cv2. VideoCapture(img_path)
   if imgtype==1:
       frame_yeartime = frame[560:, 800:, :]
      cv2.imwrite(path1 + img_path, frame_yeartime)
       cv2.imwrite(path2 + img_path, frame)
       #处理灰度图或二值图像,有两个通道
      cv2.imwrite(path1 + img_path, frame_yeartime)
       cv2.imwrite(path2 + img_path, frame)
     base64_data = base64.b64encode(file.read())
```

这里首先调用 GetAccess 来获取接口调用的 access_token 参数以及 token 的

有效期(单位为秒)。

之后将图片变为 base64 编码格式,再调用 RecogniseGeneral 函数进行图片 OCR 识别。结果放在 recognise 里。

之后剔除不必要的数据,如开始的度量值,以及中间出现的 Popular Programming Languages。

最后把时间放到第一项。

GetAccess 函数如下:

```
| June |
```

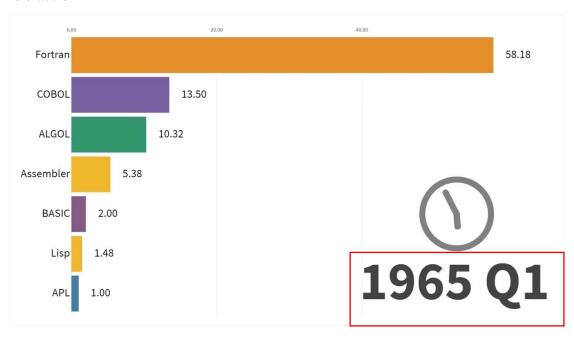
RecogniseGeneral 函数如下:

返回的是识别结果。

三: 实验问题

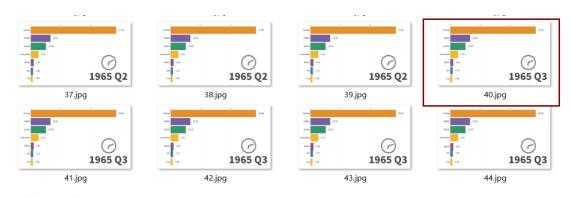
1. 如何每个季度都取到一个帧。

这里采用的解决办法是由于每一帧图片大小为 1280*720,可以提取每一帧图片的右下角【800: 1280,560: 720】这一块,这一块表示的是时间。如下图所示:



然后计算当前这一块区域与上一帧此块区域的相关性,这里采用的是皮尔逊系数。

以下面几张图为例 (37 帧到 44 帧):



计算相关性:

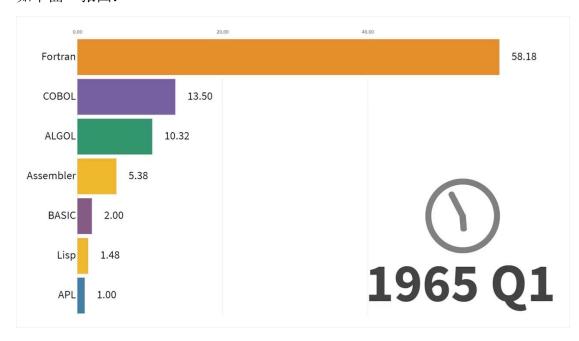
第37帧与前一帧的相关性: 0.999999 第38帧与前一帧的相关性: 0.999998 第39帧与前一帧的相关性: 0.999999 第40帧与前一帧的相关性: 0.981921 第41帧与前一帧的相关性: 0.999997 第42帧与前一帧的相关性: 0.999998 第43帧与前一帧的相关性: 0.999999 第44帧与前一帧的相关性: 0.999999

可以明显看到,每一季度的第一帧与前面帧的相关性较小,所以可以取阈值 0.99,当此帧的相关性小于阈值时,说明这一帧是一个季度的开始帧,将其 保存下来。

这样就完成了关键帧的选取。

2. 处理多余数据。

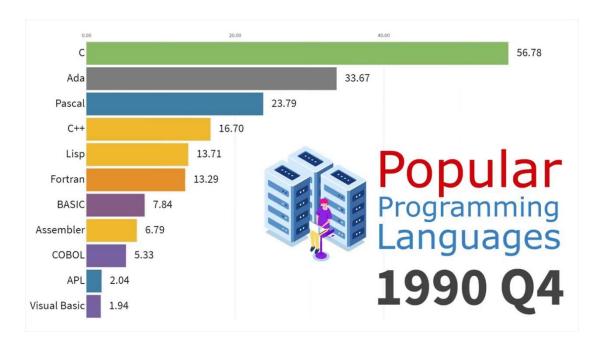
如下面一张图:



调用百度 OCR 之后,返回的结果是:

```
🟣 'words result' (2500910437424) = {list} <class 'list'>: [...
  00 = {dict} <class 'dict'>: {'words': '0.00'}
  = 01 = {dict} <class 'dict'>: {'words': '20.00'}
  = 02 = {dict} <class 'dict'>: {'words': '40.00'}
  = 03 = {dict} <class 'dict'>: {'words': 'Fortran'}
  = 04 = {dict} <class 'dict'>: {'words': '58.18'}
▶ ■ 05 = {dict} <class 'dict'>: {'words': 'COBOL'}
▶ = 06 = {dict} <class 'dict'>: {'words': '13.50'}
   = 07 = {dict} <class 'dict'>: {'words': 'ALGOL'}
▶ = 08 = {dict} <class 'dict'>: {'words': '10.32'}
  09 = {dict} <class 'dict'>: {'words': ' Assembler'}
▶ = 10 = {dict} <class 'dict'>: {'words': '5.38'}
▶ ■ 11 = {dict} <class 'dict'>: {'words': 'BASIC'}
   12 = {dict} <class 'dict'>: {'words': '2.00'}
▶ = 13 = {dict} <class 'dict'>: {'words': 'Lisp1.48'}
  14 = {dict} <class 'dict'>: {'words': 'APL1.00'}
► = 15 = {dict} <class 'dict'>: {'words': '1965Q1'}
```

多余数据包括开始的度量值,以及后面有些帧出现的 Popular Programming Languages 这三个词语:



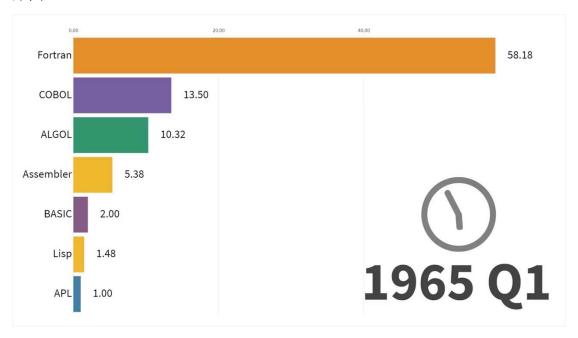
针对度量值:可以循环遍历返回的数据,当某一项为字母时,说明前面都是度量值,从此处开始保存数据即可。

针对 Popular Programming Languages 这三个词语:可以直接在代码中删去。

3. 把时间提到第一位。

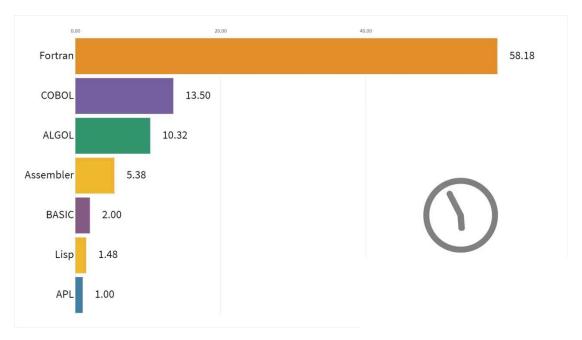
由于不同图片返回时间的位置不一样,有的是最后一项返回时间,有的则在倒数第二项返回时间。

这里采用的解决方法是,先把图片右下角的时间进行识别。之后把该区域补全为白色,即把一张图片分开识别: 原图:



分开识别:

1965 Q1



最后把第一个识别的结果加上第二个识别的结果。这样可以保证时间能够正确放到第一位。

4. 百度 OCR 识别结果的准确性。

调用百度 OCR 的时候识别结果不能保证百分之百正确。

API列表:				
API	状态	请求地址	调用量限制	QPS限制
通用文字识别	●免费使用	https://aip.baidubce.com/rest/2.0/ocr/v1/general_basic	50000次/天免费	不保证并发
通用文字识别 (含位置 信息版)	●免费使用	https://aip.baidubce.com/rest/2.0/ocr/v1/general	500次/天免费	不保证并发
通用文字识别 (高精度 版)	● 免费使用	https://aip.baidubce.com/rest/2.0/ocr/v1/accurate_basic	500次/天免费	不保证并发
通用文字识别 (高精度 含位置版)	● 免费使用	https://aip.baidubce.com/rest/2.0/ocr/v1/accurate	50次/天免费	不保证并发
网络图片文字识别	●免费使用	https://aip.baidubce.com/rest/2.0/ocr/v1/webimage	500次/天免费	不保证并发
身份证识别	●免费使用	https://aip.baidubce.com/rest/2.0/ocr/v1/idcard	500次/天免费	不保证并发
银行卡识别	●免费使用	https://aip.baidubce.com/rest/2.0/ocr/v1/bankcard	500次/天免费	不保证并发
驾驶证识别	● 免费使用	https://aip.baidubce.com/rest/2.0/ocr/v1/driving_license	200次/天免费	不保证并发
行驶证识别	●免费使用	https://aip.baidubce.com/rest/2.0/ocr/v1/vehicle_license	200次/天免费	不保证并发
营业执照识别	●免费使用	https://aip.baidubce.com/rest/2.0/ocr/v1/business_license	200次/天免费	不保证并发
车牌识别	●免费使用	https://aip.baidubce.com/rest/2.0/ocr/v1/license_plate	200次/天免费	不保证并发

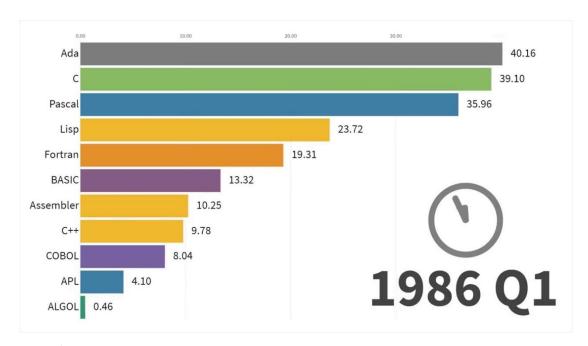
可以使用如上接口,比如通用文字识别,高精度版等等,经过实验发现,有一个网络图片文字识别的 api 效果相比于其他是最好的。

但是还是有问题的,比如有些图片的 C,R 两个字符识别不出来,但是将其转化为灰度图则能识别出来。

这里测试时使用了四种图片进行识别,原图片,宽和高都放大了两倍的图片,

二值图像,灰度图,发现有时候原图像效果最好,有时候灰度图效果最好, 所以我们采用的方法是,将原图像和灰度图像都进行识别,选择识别结果的 多的那组,识别的更全。

比如如下图片:



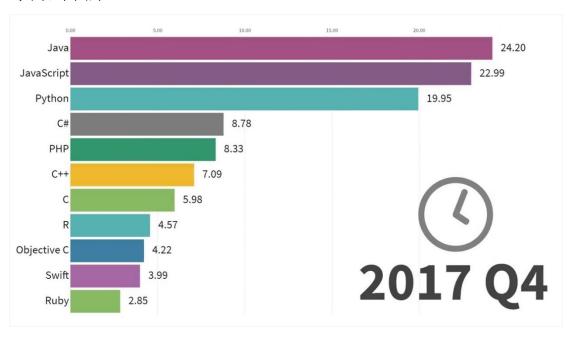
识别结果:

```
D:\Bmacondalymacondalypribon.ese E:/大三/序籍(水木市達/baida.pcr_api.p7
原始图像:['1986.Q1', 'Ada', '40.16', 'C', '39.10', 'Pascal', '35.96', 'Lisp', '23.72', 'Fortran', '19.31', 'BASIC', '13.32', 'Assembler', '10.25', 'C++', '9.78', 'CGBQL', '8.04', 'AFL', '4.10', 'ALGQL', '0.46']
放大器器:['1986.Q1', 'Ada', '40.16', 'C', '39.10', 'Pascal', '35.96', 'Lisp', '23.72', 'Fortran', '19.31', 'BASIC', '13.32', 'Assembler', '10.25', 'C++', '9.78', 'CGBQL', '8.04', 'AFL', '4.10', 'ALGQL', '0.46']
灰景图器:['1986.Q1', 'Ada', '40.16', '30', 'Pascal', '35.96', 'Lisp', '23.72', 'Fortran', '19.31', 'BASIC', '13.32', 'Assembler', '10.25', 'C++', '9.78', 'CGBQL', '8.04', 'AFL', '4.10', 'ALGQL', '0.46']
工作图像:['1986.Q1', 'Ada', '40.16', 'C', '39.10', 'Fascal', '35.96', 'Lisp', '23.72', 'Fortran', '19.31', 'BASIC', '13.32', 'Assembler', '10.25', 'C++', '9.78', 'CGBQL', '8.04', 'AFL', '4.10', 'ALGQL', '0.46']

Process finished with exit code 0
```

可以看到原始图像比灰度图识别效果好。

对于如下图片:

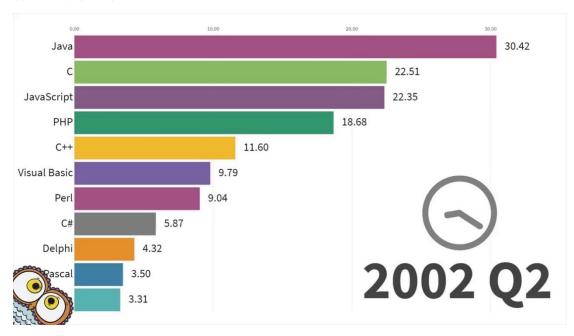


识别结果:

```
Dianacondalpython.ese E:/大三上多年位/大信上/saidu_cor_apt.py
| 原色語音:「2017.04**, | Java**, | 24.20**, | Java**saidu_cor_apt.py
| 原色語音:「2017.04**, | Java**, | 24.20**, | Java*saidu_cor_apt.py
| 原色語音:「2017.04**, | Java**, | 24.20**, | Java*saidu_cor_apt.py
| 原色語音:「2017.04**, | Java**, | 24.20**, | Java*saidu_cor_apt.py
| Rabby**, | 2.89**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**, | 18.99**
```

可以看到灰度图比原始图识别效果好。

5. 有些图片被遮挡。



如这个图片,左下角被猫头鹰遮挡,而且整个季度都在遮挡,这样的图片是没有办法的。只能采用手动修改最后的数据补全。

不过 219 个季度,只有 3 个季度被遮挡了,修改还是比较方便的。

四:实验结果分析:

存储到 scv 文件,如下:

Α Β	C 0					L	IVI IV	U P	¥	R S	.	U
1965.Q1 Fortran 1965.Q2 Fortran	58.18 COBO 58.18 COBO				8 BASIC 8 BASIC	2 Lisp 2 Lisp	1.48 APL 1.48 APL	1				
1965.Q3 Fortran	57.02 COBO	13.25 ALC	GOL 10.23 As	semble 5.3	1 BASIC 2	.08 APL	1.73 Lisp	1.46				
965.Q4 Fortran 966.Q1 Fortran	55.86 COBO 54.7 COBO					.46 BASIC .19 BASIC	2.17 Lisp 2.25 Lisp	1.45				
966.Q2 Fortran	53.54 COBO	12.5 ALC	GOL 9.96 As	semble 5.1	3 APL 3	.92 BASIC	2.33 Lisp	1.43				
966.Q3 Fortran 966.Q4 Fortran	51.11 COBO 48.69 COBO	11.5 ALC	GOL 9.31 As	semble 4.8	1 APL 4	.13 BASIC .33 BASIC	2.36 Lisp 2.39 Lisp	1.39 1.36				
967.Q1 Fortran 967.Q2 Fortran	46.26 COBO 43.83 COBO	11 ALC	GOL 8.99 As	semble 4.6	6 APL 4	.54 BASIC 4.5 BASIC	2.42 Lisp 2.45 Lisp	1.33 1.3				
967.Q3 Fortran	41.02 COBO	10.04 ALC	GOL 8.23 AF	PL 4.9	5 Assemble 4	.46 BASIC	2.71 Lisp	1.41				
967.Q4 Fortran 968.Q1 Fortran	38.21 COBO 35.4 COBO					.42 BASIC .38 BASIC	2.96 Lisp 3.22 Lisp	1.52 1.63				
968.Q2 Fortran	32.58 COBO	8.67 ALC	GOL 6.92 AF	PL 5.5	4 Assemble 4	.33 BASIC	3.48 Lisp	1.73				
.968.Q3 Fortran .968.Q4 Fortran	30.63 COBO 28.68 COBO					4.4 BASIC .46 BASIC	3.59 Lisp 3.7 Lisp	1.83				
.969.Q1 Fortran	26.73 COBO	7.35 ALC	GOL 6.08 AF	PL 4.6	7 Assemble 4	.52 BASIC	3.81 Lisp	2.03				
.969.Q2 Fortran .969.Q3 Fortran	24.78 COBO 24.83 COBO					.38 BASIC .32 BASIC	3.92 Lisp 3.87 Lisp	2.13				
1969.Q4 Fortran	24.89 COBO	6.63 ALC	GOL 5.32 As	semble 4.7	1 APL 4	.27 BASIC	3.82 Lisp	2.57				
.970.Q1 Fortran .970.Q2 Fortran	24.94 COBO 25 COBO					.22 BASIC .17 BASIC	3.77 Lisp 3.73 Lisp	2.78 3 Pascal	0.42			
970.Q3 Fortran	24.75 COBO	6.58 Ass	emble 4.88 At	.GOL 4.6	9 APL 4	.13 BASIC	4.01 Lisp	3.29 Pascal	0.71			
970.Q4 Fortran 971.Q1 Fortran	24.5 COBO 24.25 COBO					4.3 APL 4.4 APL	4.08 Lisp 4.04 Lisp	3.58 Pascal 3.88 Pascal	1 29			
.971.Q2 Fortran	24 COBO	7.33 Ass	emble 5 BA	SIC 4.8	8 ALGOL 4	.25 Lisp	4.17 APL	4 Pascal	1.58			
.971.Q3 Fortran .971.Q4 Fortran	24.25 COBO 24.5 COBO					.29 ALGOL .42 ALGOL	4.21 APL 4.17 APL	3.85 Pascal 3.71 Pascal	1.69 1.79			
.972.Q1 Fortran	24.75 COBO					.54 ALGOL	4.13 APL	3.56 Pascal	1.9			
.972.Q2 Fortran .972.Q3 Fortran	25 COBO 24.85 COBO					.67 ALGOL 4.5 ALGOL	4.08 APL 4.1 APL	3.42 Pascal 3.52 Pascal	2.38			
972.Q4 Fortran	24.7 COBO				3 Assemble 4	.33 ALGOL	4.13 APL	3.63 Pascal	2.75			
973.Q1 Fortran 973.Q2 Fortran	24.55 COBO 24.4 COBO					.17 ALGOL .17 Assemble	4.15 APL 4 APL	3.73 Pascal 3.83 Pascal	3.13			
973.Q3 Fortran	24.36 COBO					.33 Assemble	3.9 APL	3.85 Pascal 3.88 Assemb	3.73			
.973.Q4 Fortran .974.Q1 Fortran	24.32 COBO 24.29 COBO					4.5 Pascal .67 Pascal	3.96 APL 4.19 APL	3.9 Assemb				
.974.Q2 Fortran	24.25 COBO	10.59 List	6.58 BA	SIC 5	7 ALGOL 4	.84 Pascal .92 Pascal	4.43 APL 4.81 APL	3.92 Assemb	ble 3.59			
.974.Q3 Fortran .974.Q4 Fortran	24.44 COBO 24.63 COBO	11.33 List	6.67 BA	SIC 5	8 Pascal 5	.21 ALGOL	5 APL	4.13 Assemb	ble 3.83			
.975.Q1 Fortran .975.Q2 Fortran	24.81 COBO 25 COBO	11.71 List	6.71 BA	SIC 5.8	5 Pascal	5.6 ALGOL 5.9 ALGOL	5.08 APL 5.17 APL	4.54 Assemb	ble 3.96		2	
1975.Q2 Fortran	25.13 COBO	12.29 List	6.81 Pa	scal 6	5 BASIC 5	.86 ALGOL	5.13 APL	4.67 Assemb	ble 4.25 C		2.25	
1975 O4 Fortran	25.25 COBO	12.5 Pas	cal 7 Lis	in 6.8	8 BASIC 5	81 ALGOI	5.08 API	4 58 Assemb	ble 4 42 C		2.5	
A B 1976.Q1 Fortran	C D 25.38 COBOL	E F 12.71 Pascal	G H 7.5 Lisp	I J 6.94 BASIC	K L N	1 N 5.04 Assemble	O P		T 2.75	U V	W X	Υ
1976.Q2 Fortran	25.5 COBOL 25.25 COBOL	12.92 Pascal 12.65 Pascal	8 Lisp	7 BASIC 7.06 BASIC	5.72 ALGOL	5 Assemble 4.79 Assemble	4.75 APL 4.79 APL	4.42 C	3			
1976.Q3 Fortran 1976.Q4 Fortran	25 COBOL	12.38 Pascal	9.54 Lisp	7.13 BASIC	6.35 Assemble	4.83 ALGOL	4.58 APL	4.5 C 3	3.94			
1977.Q1 Fortran 1977.Q2 Fortran	24.75 COBOL 24.5 COBOL	12.1 Pascal 11.83 Pascal	10.31 Lisp 11.08 Lisp	7.19 BASIC 7.25 BASIC		4.88 APL 4.92 C	4.54 C 4.88 APL		4.38 4.17			
1977.Q3 Fortran 1977.Q4 Fortran	24.38 Pascal 24.25 Pascal	12.06 COBOL 13.04 COBOL	12.04 Lisp 12.25 BASIC	7.5 BASIC 7.86 Lisp	7.42 C 7.75 C	5.09 Assemble 5.3 Assemble	4.9 APL 4.88 APL		4.02 3.88			
1978.Q1 Fortran 1978.Q2 Fortran	24.13 Pascal 24 Pascal	14.02 COBOL 15 COBOL	12.46 BASIC 12.67 BASIC	8.31 Lisp 8.75 Lisp	8 C	5.51 Assemble 5.72 APL	4.85 APL 4.83 Assemble	4.77 ALGOL 3	3.73 3.58			
1978.Q3 Fortran	24.25 Pascal	15.58 COBOL	12.31 BASIC	9.52 Lisp	8.33 C	6.07 Assemble	4.73 APL	4.48 ALGOL 3	3.35			
1978.Q4 Fortran 1979.Q1 Fortran	24.5 Pascal 24.75 Pascal	16.17 COBOL 16.75 COBOL	11.6 BASIC 1	.0.29 Lisp .1.06 Lisp	8.5 C	6.42 Assemble 6.77 Assemble	4.63 APL 4.52 APL	3.77 ALGOL	3.13 2.9			
1979.Q2 Fortran 1979.Q3 Fortran	25 Pascal 24.75 Pascal	17.33 BASIC 19.38 BASIC	12.88 COBOL 1	1.25 Lisp 1.52 Lisp	8.79 C	7.12 Assemble 7.68 Assemble	4.42 APL 4.69 APL	3.6 ALGOL 2	2.67			
1979.Q4 Fortran 1980.Q1 Fortran	24.5 Pascal 24.25 Pascal	21.42 BASIC 23.46 BASIC	13.94 COBOL 1 14.99 COBOL 1	1.79 Lisp 2.06 Lisp	9 C 9.21 C	8.24 Assemble 8.8 Assemble	4.96 APL 5.23 APL	3.79 ALGOL 2 3.98 ALGOL 2	2.58 2.54			
1980.Q2 Pascal 1980.Q3 Pascal	25.5 Fortran 26.21 Fortran	24 BASIC 23.75 BASIC	16.05 COBOL 1	2.33 Lisp 12.5 C	9.42 C 10.36 Lisp	9.36 Assemble 10 Assemble	5.5 APL 6.21 Ada	4.17 Ada	3 ALGOL 4.31 ALGOL	2.5 C++ 2.44 C++	1 1.25	
1980.Q4 Pascal	26.92 Fortran	23.5 BASIC	17.52 COBOL 1	2.67 C	11.36 Lisp 1	0.58 Ada	8 Assemble	6.92 APL 4	4.46 ALGOL	2.38 C++	1.5	
1981.Q1 Pascal 1981.Q2 Pascal	27.63 Fortran 28.33 Fortran	23.25 BASIC 23 BASIC		2.83 C 3.36 COBOL	13 Ada 1	11.4 Lisp 2.22 Lisp	11.17 Assemble 11.75 Assemble		4.6 ALGOL 4.75 ALGOL	2.31 C++ 2.25 C++	1.75	
1981.Q3 Pascal 1981.Q4 Pascal	29.35 Fortran 30.38 Fortran	22.75 BASIC 22.5 BASIC		5.08 C 15.8 Ada		2.96 Lisp 2.92 Lisp	12.15 Assemble 12.54 Assemble		4.81 C++ 4.88 C++	2.5 ALGOL 3 ALGOL	2.04 1.83	
1982.Q1 Pascal	31.4 Fortran 32.42 Fortran	22.25 BASIC 22 BASIC	20.89 C 1	7.02 Ada 8.24 Ada	16.12 Lisp 1	2.94 COBOL 3.33 COBOL	12.88 Assemble 12.83 Assemble		4.94 C++ 5 C++	3.5 ALGOL 4 ALGOL	1.63 1.42	
1982.Q2 Pascal 1982.Q3 Pascal	33.23 Fortran	21.85 BASIC	21.46 C 1	9.47 Ada	17.84 Lisp 1	4.38 COBOL	12.58 Assemble	10.96 APL 5	5.13 C++	4.45 ALGOL	1.46	
1982.Q4 Pascal 1983.Q1 Pascal 1983.Q2 Pascal	34.04 Fortran 34.85 C	21.71 BASIC 21.93 Fortran	21.56 BASIC 2	20.7 Ada 1.34 Ada	20.23 Lisp 1	5.42 COBOL 6.46 COBOL	12.33 Assemble 12.08 Assemble	11.88 APL 5	5.25 C++ 5.38 C++	4.89 ALGOL 5.34 ALGOL	1.5 1.54	
1983.Q3 Pascal	35.67 C 35.6 C	23.16 Ada 25.11 Ada	22.69 Fortran 2	1.42 BASIC 1.31 BASIC	20.71 Lisp 1	17.5 Assemble 8.92 Assemble	12.33 COBOL 12.46 COBOL	11.38 C++ 6	5.79 APL 8.28 APL	5.5 ALGOL 5.38 ALGOL	1.58	
1983.Q4 Pascal 1984.Q1 Pascal	35.54 C 35.48 C	27.06 Ada 29.01 Ada	23.96 Fortran 2	1.21 Lisp 1.75 Fortran	20.33 BASIC 2	0.14 Assemble 9.57 Assemble	12.58 COBOL 12.71 COBOL	10.92 C++ 6 10.46 C++ 7	5.76 APL 7.25 APL	5.25 ALGOL 5.13 ALGOL	1.21	
1984.Q2 Pascal 1984.Q3 Pascal	35.42 C 35.73 C	30.96 Ada 32.31 Ada	26.5 Lisp 2 28.02 Lisp	3.17 Fortran 23 Fortran	21 BASIC	19 Assemble 8.33 Assemble	12.83 COBOL 12.4 COBOL	10 C++ 7	7.74 APL 3.08 APL	5 ALGOL 4.79 ALGOL	0.83 0.77	
1984.Q4 Pascal	36.04 C	33.66 Ada	29.54 Lisp 2	2.83 Fortran	20.67 BASIC 1	7.66 Assemble	11.96 COBOL 11.52 C++	9.08 C++ 8	8.41 APL	4.58 ALGOL	0.71	
1985.Q1 Pascal 1985.Q2 Pascal	36.35 C 36.67 C	35.01 Ada 36.36 Ada	32.58 Lisp	2.67 Fortran 22.5 Fortran	20.33 BASIC 1	6.99 Assemble 6.32 Assemble	11.08 C++	9.09 COBOL 8	3.63 APL 3.17 APL	4.38 ALGOL 4.17 ALGOL	0.65 0.58	
1985.Q3 C 1985.Q4 C	37.25 Pascal 38.14 Ada	36.44 Ada 37.5 Pascal	36.21 Lisp 2	22.9 Fortran 3.29 Fortran	19.67 BASIC 1	5.35 Assemble 4.38 Assemble	10.81 C++ 10.54 C++	9.54 COBOL 8	3.13 APL 3.08 APL	4.15 ALGOL 4.13 ALGOL	0.54	
1986.Q1 Ada 1986.Q2 Ada	39.96 C 42.42 C	39.03 Pascal 39.92 Pascal	35.75 Lisp 2	3.69 Fortran 4.08 Fortran	19 BASIC 1	13.4 Assemble 2.43 Assemble	10.27 C++ 10 C++	9.98 COBOL	B.O4 APL B APL	4.1 ALGOL 4.08 ALGOL	0.46 0.42	
1986.Q3 Ada 1986.Q4 C	42.76 C 43.4 Ada	41.66 Pascal 43.1 Pascal	35.71 Lisp 2	4.06 Fortran	18.92 BASIC 1	1.75 C++ 1.07 C++	10.41 Assemble 10.85 Assemble	9.88 COBOL 8	B.02 APL B.04 API	3.92 ALGOL 3.75 ALGOL	0.35	
4 test	A								:	4		
1987.Q1 C 1987.Q2 C	45.14 Ada	43.44 Pascal	35.63 Lisp 35.58 Lisp	24.02 Fortrar 24 Fortrar	18.67 C++	11.29 BA 11.72 BA		Assemble 9.63 COE			3.58 ALGOL 3.42 ALGOL	0.23 0.17
	46.88 Ada	43.78 Pascal				11.72 00	3.12	Assemble 9.5 COE				
	47.62 Ada	44.88 Pascal	34.75 Lisp	22.94 Fortrar 21.88 Fortrar	18.42 C++ 1 18.17 C++	11.9 BA	SIC 9.3 A	Assemble 9.1 COE	BOL 8.13 A	APL	3.27 ALGOL	0.17
1987.Q4 C 1988.Q1 C	47.62 Ada 48.36 Ada 49.1 Ada	44.88 Pascal 45.97 Pascal 47.06 Pascal	34.75 Lisp 33.92 Lisp 33.08 Lisp	21.88 Fortrar 20.81 Fortrar	18.17 C++ 1 17.92 C++	11.9 BA 12.09 BA 12.28 BA	SIC 9.3 A SIC 8.88 A SIC 8.45 A	Assemble 9.1 COE Assemble 8.71 COE Assemble 8.31 COE	BOL 8.13 A BOL 8.17 A BOL 8.21 A	APL APL APL	3.27 ALGOL 3.13 ALGOL 2.98 ALGOL	0.17 0.17
1987.Q4 C 1988.Q1 C 1988.Q2 C 1988.Q3 C	47.62 Ada 48.36 Ada 49.1 Ada 49.84 Ada 50.38 Ada	44.88 Pascal 45.97 Pascal 47.06 Pascal 48.16 Pascal 47.3 Pascal	34.75 Lisp 33.92 Lisp 33.08 Lisp 32.25 Lisp 31.31 Lisp	21.88 Fortrar 20.81 Fortrar 19.75 Fortrar 19.48 Fortrar	18.17 C++ 17.92 C++ 17.67 C++ 17.44 C++	11.9 BA 12.09 BA 12.28 BA 12.46 CC 12.74 CC	SIC 9.3 A SIC 8.88 A SIC 8.45 A DBOL 8.25 E DBOL 8.1 A	Assemble 9.1 COE Assemble 8.71 COE Assemble 8.31 COE BASIC 8.03 Asse Assemble 7.94 BAS	BOL 8.13 A BOL 8.17 A BOL 8.21 A emble 7.92 A	APL APL APL APL	3.27 ALGOL 3.13 ALGOL 2.98 ALGOL 2.83 ALGOL 2.75 ALGOL	0.17 0.17 0.17 0.15
1987.Q4 C 1988.Q1 C 1988.Q2 C 1988.Q3 C 1988.Q4 C	47.62 Ada 48.36 Ada 49.1 Ada 49.84 Ada 50.38 Ada 50.92 Ada	44.88 Pascal 45.97 Pascal 47.06 Pascal 48.16 Pascal 47.3 Pascal 46.43 Pascal	34.75 Lisp 33.92 Lisp 33.08 Lisp 32.25 Lisp	21.88 Fortrar 20.81 Fortrar 19.75 Fortrar	18.17 C++ 17.92 C++ 17.67 C++ 17.44 C++ 17.21 C++	11.9 BA 12.09 BA 12.28 BA 12.46 CC 12.74 CC 13.02 As	SIC 9.3 A SIC 8.88 A SIC 8.45 A DBOL 8.25 E DBOL 8.1 A semble 7.96 C	Assemble 9.1 COE Assemble 8.71 COE Assemble 8.31 COE BASIC 8.03 Asse Assemble 7.94 BAS COBOL 7.96 BAS	BOL 8.13 A BOL 8.17 A BOL 8.21 A emble 7.92 A IC 7.98 A	APL APL APL APL APL	3.27 ALGOL 3.13 ALGOL 2.98 ALGOL 2.83 ALGOL	0.17 0.17 0.17
1987.Q4 C 1988.Q1 C 1988.Q2 C 1988.Q3 C 1988.Q4 C 1989.Q1 C 1989.Q2 C	47.62 Ada 48.36 Ada 49.1 Ada 49.84 Ada 50.38 Ada 50.92 Ada 51.46 Ada 52 Ada	44.88 Pascal 45.97 Pascal 47.06 Pascal 48.16 Pascal 47.3 Pascal 46.43 Pascal 45.56 Pascal 44.7 Pascal	34.75 Lisp 33.92 Lisp 33.08 Lisp 32.25 Lisp 31.31 Lisp 30.38 Lisp 29.44 Lisp 28.5 Lisp	21.88 Fortrar 20.81 Fortrar 19.75 Fortrar 19.48 Fortrar 19.21 Fortrar 18.94 Fortrar 18.67 Fortrar	18.17 C++ 17.92 C++ 17.67 C++ 17.64 C++ 17.21 C++ 16.98 C++ 16.75 C++	11.9 BA 12.09 BA 12.28 BA 12.46 CC 12.74 CC 13.02 As 13.29 As 13.57 As	SIC 9.3 A SIC 8.88 A SIC 8.45 A DBOL 8.25 E DBOL 8.25 E Semble 7.96 C Semble 8.0	Assemble 9.1 COE Assemble 8.71 COE Assemble 8.31 COE BASIC 8.03 Asse Assemble 7.94 BAS COBOL 7.66 BAS COBOL 7.67 BAS	BOL 8.13 A BOL 8.17 A BOL 8.21 A BOL 7.92 A BIC 7.98 A BIC 7.65 A BIC 7.53 A	APL APL APL APL APL APL APL APL APL	3.27 ALGOL 3.13 ALGOL 2.98 ALGOL 2.83 ALGOL 2.75 ALGOL 2.67 ALGOL 2.58 ALGOL 2.5 ALGOL	0.17 0.17 0.17 0.15 0.13 0.1 0.08
1987.Q4 C 1988.Q1 C 1988.Q2 C 1988.Q3 C 1988.Q4 C 1989.Q1 C 1989.Q2 C 1989.Q3 C 1989.Q3 C	47.62 Ada 48.36 Ada 49.1 Ada 49.84 Ada 50.38 Ada 50.92 Ada 51.46 Ada 52 Ada 52.46 Ada 52.92 Ada	44.88 Pascal 45.97 Pascal 47.06 Pascal 48.16 Pascal 47.3 Pascal 46.43 Pascal 45.56 Pascal 44.7 Pascal 42.41 Pascal 40.13 Pascal	34.75 Lisp 33.92 Lisp 33.08 Lisp 32.25 Lisp 31.31 Lisp 30.38 Lisp 29.44 Lisp 28.5 Lisp 27.88 Lisp 27.25 Lisp	21.88 Fortrai 20.81 Fortrai 19.75 Fortrai 19.48 Fortrai 19.21 Fortrai 18.94 Fortrai 18.67 Fortrai 17.85 Fortrai 17.04 Fortrai	18.17 C++ 17.92 C++ 17.67 C++ 17.67 C++ 17.44 C++ 17.21 C++ 16.98 C++ 16.75 C++ 15.81 C++ 14.88 C++	11.9 BA 12.09 BA 12.28 BA 12.46 CC 12.74 CC 13.02 AS 13.29 AS 13.57 AS 14.17 AS	SIC 9.3 A SIC 8.88 A SIC 8.45 A DBOL 8.25 E DBOL 8.1 A	Assemble 9.1 COE Assemble 8.71 COE Assemble 8.31 COE ASSEMBLE 8.31 COE ASSIC 8.03 ASSE ASSEMBLE 7.94 BAS COBOL 7.96 BAS COBOL 7.67 BAS ASSIC 7.62 COE ASSEMBLE 7.54 COE ASSEMBLE 7.54 COE ASSEMBLE 7.54 COE ASSEMBLE 7.54 COE	80L 8.13 A 80L 8.17 A 80L 8.21 A 80C 7.9 A 80C 7.85 A 80C 7.65 A 80C 7.53 A 80C 7.65 A	APL	3.27 ALGOL 3.13 ALGOL 2.98 ALGOL 2.83 ALGOL 2.75 ALGOL 2.57 ALGOL 2.58 ALGOL 2.58 ALGOL 2.38 ALGOL 2.38 ALGOL 2.28 ALGOL 2.25 ALGOL	0.17 0.17 0.17 0.15 0.13 0.1 0.08 0.08
1987.Q4 C 1988.Q1 C 1988.Q2 C 1988.Q3 C 1988.Q4 C 1989.Q1 C 1989.Q2 C 1989.Q3 C 1989.Q3 C 1989.Q4 C	47.62 Ada 48.36 Ada 49.1 Ada 49.84 Ada 50.38 Ada 50.92 Ada 51.46 Ada 52.46 Ada	44.88 Pascal 45.97 Pascal 47.06 Pascal 48.16 Pascal 47.3 Pascal 46.43 Pascal 45.56 Pascal 44.7 Pascal 42.41 Pascal	34.75 Lisp 33.92 Lisp 33.08 Lisp 32.25 Lisp 31.31 Lisp 30.38 Lisp 29.44 Lisp 28.5 Lisp 27.88 Lisp	21.88 Fortrar 20.81 Fortrar 19.75 Fortrar 19.48 Fortrar 19.21 Fortrar 18.94 Fortrar 18.67 Fortrar 17.85 Fortrar	18.17 C++ 17.92 C++ 17.67 C++ 17.44 C++ 17.21 C++ 16.98 C++ 16.75 C++ 15.81 C++	11.9 BA 12.09 BA 12.28 BA 12.46 CC 12.74 CC 13.02 As 13.57 As 14.17 As 14.17 BA 13.94 BA	SIC 9.3 A SIC 8.88 A SIC 8.45 A DBOL 8.25 E DBOL 8.1 A semble 7.96 C semble 8.0 semble 7.77 E semble 7.77 A SIC 7.71 A SIC 7.81 A	Assemble 9.1 COE Assemble 8.71 COE Assemble 8.31 COE Assemble 8.31 COE ASSEMBLE 7.94 BAS COBOL 7.96 BAS COBOL 7.67 BAS ASSIC 7.67 BAS ASSIC 7.62 COE ASSEMBLE 7.62 COE ASSEMBLE 7.62 COE ASSEMBLE 7.62 COE ASSEMBLE 7.62 COE	80L 8.13 A 80L 8.17 A 80L 8.21 A 80C 7.9 A 80C 7.85 A 80C 7.53 A 80C 7.53 A 80C 6.35 A	APL	3.27 ALGOL 3.13 ALGOL 2.98 ALGOL 2.83 ALGOL 2.75 ALGOL 2.67 ALGOL 2.58 ALGOL 2.5 ALGOL 2.5 ALGOL 2.38 ALGOL	0.17 0.17 0.17 0.15 0.13 0.1 0.08 0.08
1987 Q4 C 1988 Q1 C 1988 Q3 C 1988 Q3 C 1988 Q4 C 1989 Q1 C 1989 Q2 C 1989 Q3 C 1989 Q4 C 1990 Q1 C 1990 Q2 C	47.62 Ada 48.36 Ada 49.1 Ada 49.84 Ada 50.38 Ada 50.92 Ada 51.46 Ada 52.46 Ada 52.46 Ada 52.92 Ada 53.38 Ada 53.38 Ada 55.31 Ada	44.88 Pascal 45.97 Pascal 47.06 Pascal 48.16 Pascal 47.3 Pascal 46.43 Pascal 45.56 Pascal 44.7 Pascal 40.13 Pascal 37.84 Pascal 35.56 Pascal 34.62 Pascal	34.75 Lisp 33.92 Lisp 33.08 Lisp 32.25 Lisp 31.31 Lisp 30.38 Lisp 29.44 Lisp 28.5 Lisp 27.25 Lisp 26.63 Lisp 26.63 Lisp 26.C++ 24.9 C++	21.88 Fortrai 20.81 Fortrai 19.75 Fortrai 19.48 Fortrai 19.21 Fortrai 18.94 Fortrai 18.87 Fortrai 17.85 Fortrai 17.04 Fortrai 16.23 C++ 15.96 Lisp 16.33 Lisp	18.17 C++ 17.92 C++ 17.67 C++ 17.44 C++ 16.19 C++ 16.99 C++ 16.75 C++ 15.81 C++ 15.36 Fortran 15.42 Fortran 14.56 Fortran	11.9 BA 12.08 BA 12.28 BA 12.46 CC 13.02 As 13.02 As 13.29 As 13.57 As 14.17 BA 13.94 BA 13.94 BA 13.95 BA 13.95 BA	SIC 9.3 k SIC 8.88 k SIC 8.45 k DBOL 8.25 g DBOL 8.1 k Semble 7.98 c semble 7.77 g SIC 7.71 k SIC 7.81 k SIC 7.81 k	Assemble 9.1 COI ssemble 9.1 COI semble 9.3 LOC ASSemble 9.31 COI ASSEMBLE 9.31 COI ASSEMBLE 7.94 BAS COBOL 7.96 BAS COBOL 7.67 BAS ASSIC 7.62 COI ASSEMBLE 7.31 COI ASSEMBLE 7.31 COI ASSEMBLE 7.34 COI ASSEMBLE 7.34 COI ASSEMBLE 7.36 COI ASSEMBLE 7.36 COI ASSEMBLE 7.37 COI ASSEMBLE 7.38 COI ASSEMBLE 7.38 COI ASSEMBLE 7.39 COI ASSEMBLE 7.39 COI ASSEMBLE 7.31 COI ASSEM	80L 8.13 A 80L 8.17 A 80L 8.21 A 9mble 7.92 A 1C 7.98 A 1C 7.65 A 1C 7.53 A 1C 7.53 A 1C 7.53 A 30L 7.23 A 30L 6.35 A 30L 5.92 A 30L 5.92 A 30L 5.93 A	APL	3.27 ALGOL 3.13 ALGOL 2.98 ALGOL 2.83 ALGOL 2.75 ALGOL 2.67 ALGOL 2.58 ALGOL 2.58 ALGOL 2.38 ALGOL 2.25 ALGOL 2.25 ALGOL 2.13 ALGOL 2.13 ALGOL 2.13 ALGOL 2.27 Visual Bat 2.02 Visual Bat	0.17 0.17 0.17 0.15 0.13 0.1 0.08 0.08 0.08 1.47
1987 Q4 C 1988 Q1 C 1988 Q3 C 1988 Q3 C 1988 Q4 C 1989 Q1 C 1989 Q1 C 1989 Q2 C 1989 Q4 C 1999 Q1 C 1990 Q2 C 1990 Q3 C 1990 Q3 C	47.62 Ada 48.36 Ada 49.1 Ada 49.84 Ada 50.38 Ada 50.92 Ada 51.46 Ada 52 Ada 52.46 Ada 52.92 Ada 53.38 Ada 53.38 Ada 55.31 Ada 55.31 Ada 55.31 Ada 55.37 Ada 55.37 Ada	44.88 Pascal 45.97 Pascal 47.06 Pascal 48.16 Pascal 48.16 Pascal 46.43 Pascal 45.45 Pascal 45.47 Pascal 42.41 Pascal 40.13 Pascal 35.56 Pascal 36.2 Pascal 32.73 Pascal 32.73 Pascal 32.73 Pascal	34.75 Lisp 33.92 Lisp 33.08 Lisp 32.25 Lisp 31.31 Lisp 30.38 Lisp 29.44 Lisp 27.25 Lisp 27.25 Lisp 26.63 Lisp 26.63 Lisp 26.64 C++ 24.9 C++ 23.79 C++ 22.69 C++	21.88 Fortrai 20.81 Fortrai 19.75 Fortrai 19.48 Fortrai 19.21 Fortrai 19.24 Fortrai 18.67 Fortrai 17.85 Fortrai 17.04 Fortrai 16.23 C++ 15.96 Lisp 16.73 Lisp 16.7 Lisp	18.17 C++ 17.92 C++ 17.67 C++ 17.44 C++ 16.75 C++ 16.75 C++ 16.75 C++ 16.75 C++ 16.75 C++ 15.36 C++ 15.36 Fortran 15.42 Fortran 14.56 Fortran 13.71 Fortran 13.71 Fortran 13.71 Fortran 13.74 Lisp	11.9 BA 12.09 BA 12.28 BA 12.46 CC 12.74 CC 13.02 As 13.29 As 13.57 As 14.17 As 14.77 BA 13.94 BA 13.15 BA 13.15 BA 13.28 BA 12.28 BA	SIC 9.3 8.8 8.5	Assemble 9.1 COI Assemble 8.71 COE Assemble 8.71 COE ASSEMBLE 8.0 AS ASSEMBLE 7.94 BAS COBOL 7.88 BAS COBOL 7.67 BAS ASIC 7.62 COE ASSEMBLE 7.31 COE ASSEMBLE 7.31 COE ASSEMBLE 7.30 COE ASSEMBLE 6.94 COE ASSEMBLE 6.94 COE ASSEMBLE 6.95 COE ASSEMBLE 6.95 COE ASSEMBLE 6.65 COE ASSEMBLE 6.65 COE ASSEMBLE 6.65 COE ASSEMBLE 6.65 COE	30L 8.13 A 30L 8.17 A 30L 8.21 A emble 7.92 A IC 7.98 A IC 7.65 A IC 7.65 A IC 7.65 A IC 7.63 A SOL 6.79 A 30L 6.35 A 30L 5.63 A 30L 5.63 A 30L 5.63 A	APL	3.27 ALGOL 3.13 ALGOL 2.98 ALGOL 2.83 ALGOL 2.75 ALGOL 2.57 ALGOL 2.58 ALGOL 2.58 ALGOL 2.25 ALGOL 2.25 ALGOL 2.213 ALGOL 2.13 ALGOL 2.14 Visual Bat 2.02 Visual Bat 2.41 APL	0.17 0.17 0.17 0.15 0.13 0.1 0.08 0.08 0.08 1 1.47 1.94 2.06
1987 Q4 C 1988 Q2 C 1988 Q3 C 1988 Q3 C 1988 Q4 C 1989 Q1 C 1989 Q3 C 1989 Q3 C 1989 Q3 C 1989 Q3 C 1990 Q2 C 1990 Q2 C 1990 Q2 C 1990 Q4 C 1990 Q4 C	47.62 Ada 48.36 Ada 49.1 Ada 49.84 Ada 50.38 Ada 50.92 Ada 51.46 Ada 52.46 Ada 52.92 Ada 53.38 Ada 53.84 Ada 55.31 Ada 56.78 Ada	44.88 Pascal 45.97 Pascal 47.06 Pascal 48.16 Pascal 47.3 Pascal 46.43 Pascal 45.56 Pascal 42.41 Pascal 40.13 Pascal 37.84 Pascal 35.56 Pascal 34.62 Pascal 33.67 Pascal	34.75 Lisp 33.92 Lisp 33.08 Lisp 32.25 Lisp 31.31 Lisp 30.38 Lisp 29.44 Lisp 27.88 Lisp 27.25 Lisp 26.63 Lisp 26.63 Lisp 26.97 C++ 24.9 C++ 23.79 C++	21.88 Fortrat 20.81 Fortrat 19.75 Fortrat 19.48 Fortrat 19.21 Fortrat 18.94 Fortrat 18.67 Fortrat 17.04 Fortrat 17.04 Fortrat 16.23 C++ 15.96 Lisp 16.33 Lisp 16.7 Lisp 16.7 Lisp 17.06 Fortrat 17.43 Fortrat	18.17 C++ 17.67 C++ 17.67 C++ 17.67 C++ 17.67 C++ 17.68 C++ 17.69 C++ 16.98 C++ 16.98 C++ 15.81 C++ 15.81 C++ 15.36 Fortran 15.42 Fortran 15.45 Fortran 13.71 Fortran 13.44 Lisp 13.58 Lisp	11.9 BA 12.09 BA 12.28 BA 12.46 CC 12.74 CC 13.02 As 13.29 As 13.57 As 14.17 BA 13.94 BA 13.84 BA 13.15 BA 13.15 BA	SIC 9.3 A	Assemble 9.1 COI Assemble 8.71 COI Assemble 8.71 COI ASSEMBLE 8.03 ASSE COBOL 7.68 BAS COBOL 7.68 BAS COBOL 7.67 BAS ASSEMBLE 7.54 COI ASSEMBLE 7.51 COI ASSEMBLE 7.51 COI ASSEMBLE 6.49 COI SSEMBLE 6.49 COI SSEMBLE 6.79 COI SSEMBLE 6.79 COI COI COI COI COI COI COI COI	30L 8.13 A 30L 8.17 A 30L 8.17 A 30L 8.21 A 30L 7.9 A 30L 7.8 A 30L 7.55 A 30L 6.79 A 30L 5.92 A 30L 5.92 A 30L 5.93 A 30L 5.93 A 30L 5.93 A 30L 5.93 A 30L 5.93 A	APL	3.27 ALGOL 3.13 ALGOL 2.88 ALGOL 2.75 ALGOL 2.75 ALGOL 2.58 ALGOL 2.58 ALGOL 2.38 ALGOL 2.25 ALGOL 2.25 ALGOL 2.25 ALGOL 2.25 ALGOL 2.25 ALGOL 2.25 ALGOL 2.25 ALGOL 2.25 ALGOL 2.25 ALGOL 2.20 Visual Bat 2.02 Visual Bat	0.17 0.17 0.17 0.15 0.13 0.1 0.08 0.08 0.08 0.08 1.47 1.94
1987 Q4 C 1988 Q1 C 1988 Q2 C 1988 Q3 C 1988 Q3 C 1988 Q4 C 1988 Q4 C 1989 Q4 C 1990 Q2 C 1990 Q3 C 1990 Q4 C 1991 Q3 C 1991 Q3 C	47.62 Ada 48.36 Ada 49.1 Ada 49.1 Ada 50.38 Ada 50.92 Ada 51.46 Ada 52.40 Ada 52.92 Ada 52.92 Ada 53.38 Ada 55.31 Ada 55.31 Ada 55.31 Ada 56.73 Ada 56.73 Ada 66.02 Ada 66.02 Ada 66.02 Ada	44.88 Pascal 45.97 Pascal 47.06 Pascal 48.16 Pascal 47.3 Pascal 46.43 Pascal 46.43 Pascal 44.7 Pascal 42.41 Pascal 37.84 Pascal 37.84 Pascal 33.67 Pascal 32.73 Pascal 31.78 Pascal 22.72 Pascal 26.61 Pascal	34.75 Lisp 33.92 Lisp 33.08 Lisp 32.25 Lisp 30.38 Lisp 90.38 Lisp 29.44 Lisp 29.45 Lisp 27.28 Lisp 27.28 Lisp 26.62 Lisp 26.62 Lisp 26.62 Lisp 26.62 Lisp 27.48 Lisp 28.62 Lisp 28.62 Lisp 28.63 Lisp 28.64 C++ 24.95 C+	21.88 Fortrar 20.81 Fortrar 19.75 Fortrar 19.48 Fortrar 19.21 Fortrar 18.94 Fortrar 18.96 Fortrar 17.95 Fortrar 17.04 Fortrar 17.04 Fortrar 16.23 C++ 15.96 Lisp 16.33 Lisp 16.7 Lisp 17.06 Fortrar 17.43 Fortrar 18.58 Fortrar	1 18.17 C++ 1 17.67 C++ 1 17.67 C++ 1 17.67 C++ 1 17.40 C++ 1 17.41 C++ 1 16.18 C++ 1 15.81 C++ 1 15.81 C++ 1 15.82 Fortran 15.72 Fortran 13.71 Fortran 13.71 Fortran 13.71 Fortran 13.74 Lisp 1 13.28 Lisp 1 13.24 Lisp	11.9 BA 12.28 BA 12.28 BA 12.46 CC 13.02 As 13.02 As 13.57 As 14.17 BA 13.94 BA 13.15 BA 13.15 BA 13.15 BA 14.17 BA 13.18 BA 13.18 BA 14.17 BA 14.17 BA 13.18 BA 14.18 BA 14.18 BA 14.19 BA 15.18 BA 16.18 BA 16.1	SIC 9.3 /	335mble 9.1 COI	30L 8.13 A 30L 8.17 A 30L 8.17 A 30L 8.21 A 30L 8.21 A 30L 7.28 A 30L 7.28 A 30L 7.85 A 30L 7.85 A 30L 6.35 A 30L 6.35 A 30L 5.32 A 30L 5.33 A 30L 5.33 A 30L 5.33 A 30L 4.44 V 30L 4.44 V 30L 4.43 V	APL	3.27 ALGOL 3.13 ALGOL 2.88 ALGOL 2.83 ALGOL 2.75 ALGOL 2.67 ALGOL 2.58 ALGOL 2.58 ALGOL 2.58 ALGOL 2.25 ALGOL 2.25 ALGOL 2.25 ALGOL 2.25 ALGOL 2.25 ALGOL 2.21 ALGOL	0.17 0.17 0.17 0.15 0.13 0.1 0.08 0.08 0.08 1 1.47 1.94 2.06 2.08 2.02 1.96
1987 Q4 C 1988 Q1 C 1988 Q1 C 1988 Q3 C 1988 Q3 C 1988 Q4 C 1989 Q1 C 1989 Q1 C 1989 Q2 C 1989 Q2 C 1989 Q2 C 1989 Q2 C 1989 Q3 C 1989 Q4 C 1990 Q1 C 1990 Q3 C 1991 Q1 C 1991 Q3 C 1991 Q4 C 1991 Q3 C	47.62 Ada 48.36 Ada 49.1 Ada 49.1 Ada 50.38 Ada 50.38 Ada 50.92 Ada 52.46 Ada 52.46 Ada 52.92 Ada 52.92 Ada 53.38 Ada 55.31 Ada 55.31 Ada 56.78 Ada 66.62 Ada 66.62 Ada	44 88 Pascal 45 97 Pascal 47 06 Pascal 47 16 Pascal 48 16 Pascal 44 17 Pascal 45 15 Pascal 44 17 Pascal 42 14 Pascal 35 15 Pascal 35 15 Pascal 36 17 Pascal 32 Pascal	34.75 Lisp 33.92 Lisp 33.92 Lisp 32.25 Lisp 31.31 Lisp 30.38 Lisp 28.5 Lisp 27.85 Lisp 27.85 Lisp 27.25 Lisp 26.63 Lisp 27.25 Lisp 26.63 Lisp 26.64 C++ 24.9 C++ 22.96 C++ 24.9 C++ 24.96 C++ 24.96 C++ 24.96 C++ 24.96 C++ 24.96 C++ 25.96 C++ 26.96 C++ 27.97 C++ 28.96 C++ 29.96 C++ 2	21.88 Fortrar 20.81 Fortrar 19.75 Fortrar 19.48 Fortrar 19.21 Fortrar 19.21 Fortrar 18.94 Fortrar 18.95 Fortrar 17.04 Fortrar 16.23 C++ 15.96 Lisp 16.71 Lisp 16.71 Lisp 17.04 Fortrar 18.25 Fortrar 18.25 Fortrar 18.27 Fortrar 18.27 Fortrar 17.17 Fortrar	1 18.17 C++ 1 17.92 C++ 1 17.67 C++ 1 17.47 C++ 1 17.41 C++ 1 17.21 C++ 1 16.98 C++ 1 16.98 C++ 1 15.91 C++ 1 15.91 C++ 1 15.98 Fortran 13.71 Fortran 13.71 Fortran 13.71 Fortran 13.71 September 13.72 Lisp 1 13.24 Lisp 1 13.25 Lisp 1 13.15 Lisp	11.9 BA 12.09 BA 12.28 BA 12.46 CC 13.74 CC 13.02 AS 13.29 AS 13.57 AS 14.17 AS 13.94 BA 13.75 BA 13.15 BA 13.15 BA 13.15 BA 13.15 BA 13.16 BA 13.18 BA 13.1	SIC	Assemble 9.1 CORS Assemble 8.31 CORS ASSEMBLE 8.31 CORS ASSEMBLE 7.94 BASS ASSEMBLE 7.94 BASS COBOL 7.98 BASS COBOL 7.81 BASS ASSEMBLE 7.62 CORS ASSEMBLE 7.31 CORS ASSEMBLE 7.31 CORS ASSEMBLE 6.94 CORS ASSEMBLE 6.95 CORS ASSEMBLE 6.94 CORS	30L 8.13 A 30L 8.17 A 30L 7.85 A 30L 7.85 A 30L 7.85 A 30L 6.35 A 30L 5.33 A 30L 5.34 A 30L 4.44 A 30L 4.44 A 30L 4.44 A 30L 4.44 A 30L 4.43 A 30L 4.43 A 30L 3.81 A	APL	3.27 ALGOL 3.13 ALGOL 2.98 ALGOL 2.83 ALGOL 2.67 ALGOL 2.67 ALGOL 2.58 ALGOL 2.58 ALGOL 2.25 ALGOL 2.25 ALGOL 2.25 ALGOL 2.13 ALGOL 2.13 ALGOL 2.14 ALGOL 2.14 ALGOL 2.15 ALGOL 2.15 ALGOL 2.15 ALGOL 2.15 ALGOL 2.16 ALGOL 2.17 SWAR BAR 2.02 Visual Bar 2.04 Visual Bar 2.04 Visual Bar 2.05 APL 3.19 APL 3.5 APL 3.5 APL 3.5 APL	0.17 0.17 0.15 0.13 0.1 0.08 0.08 0.08 1 1.47 1.94 2.06 2.08 2.02 1.96 1.96 1.96
1987 Q4 C 1988 Q1 C 1988 Q2 C 1988 Q2 C 1988 Q3 C 1989 Q4 C 1999 Q1 C 1999 Q2 C 1999 Q3 C 1999 Q4 C 1991 Q4 C 1991 Q5 C 1991 Q5 C 1991 Q5 C 1991 Q5 C	47.62 Ada 48.36 Ada 49.11 Ada 49.91 Ada 50.38 Ada 50.38 Ada 50.46 Ada 52.22 Ada 52.22 Ada 52.22 Ada 52.22 Ada 53.38 Ada 53.38 Ada 53.38 Ada 53.38 Ada 53.38 Ada 53.38 Ada 56.78 Ada 56.72 Ada 65.21 Ada 65.22 Ada 65.22 Ada 65.22 Ada 65.23 Ada 65.24 Ada 65.25 Ada 65.25 Ada 65.27 Ada 69.20 Ada 68.92 Ada 68.92 Ada 68.92 Ada 68.92 Ada	44 88 Pascal 45 97 Pascal 47.06 Pascal 48.16 Pascal 47.3 Pascal 47.3 Pascal 45.56 Pascal 46.43 Pascal 42.41 Pascal 35.56 Pascal 35.56 Pascal 33.67 Pascal 32.73 Pascal 32.73 Pascal 32.73 Pascal 32.73 Pascal 32.74 Pascal 32.74 Pascal 32.75 Pascal 32.75 Pascal 32.75 Pascal 32.76 Pascal 32.77 Pascal 32.77 Pascal 32.77 Pascal	34 75 Lisp 33 92 Lisp 33 92 Lisp 32 25 Lisp 31 31 Lisp 32 35 Lisp 29 44 Lisp 28 55 Lisp 27 25 Lisp 27 25 Lisp 26 C++ 23 79 C++ 22 96 C++ 11 58 C++ 19 38 C++ 19 38 C++ 19 38 C++ 19 39 C++	21.88 Fortrar 20.81 Fortrar 19.75 Fortrar 19.75 Fortrar 19.21 Fortrar 19.21 Fortrar 18.94 Fortrar 18.97 Fortrar 17.04 Fortrar 17.04 Fortrar 16.23 C++ 15.96 Lisp 16.7 Lisp 17.06 Fortrar 18.58 Fortrar 18.58 Fortrar 18.57 Fortrar 17.17 Fortrar 17.17 Fortrar 17.17 Fortrar 17.15 Fortrar	1 18.17 C++ 1 17.92 C++ 1 17.67 C++ 1 17.44 C++ 1 17.44 C++ 1 17.21 C++ 1 16.98 C++ 1 16.98 C++ 1 16.88 C++ 1 15.81 C++ 1 14.88 C++ 1 15.85 Fortran 13.71 Fo	11.9 BA 12.09 BA 12.28 BA 12.46 CC 13.02 AS 13.29 AS 13.57 AS 14.17 BA 13.15 BA 13.18 BA 13.18 BA 13.18 BA 13.88 BA 12.88 BA 14.88 BA 18.88 BA 19.88 BA	SIC 9.3 / SIC 8.45 / SIC 7.71 / SIC 7.71 / SIC 7.71 / SIC 7.78 / SIC 8.01 / S	1 CORESSEMBLE 1 CORESSEMBL	30L 8.13 A 30L 8.17 A 30L 7.9 A 30L 5.0 A	APL	3.27 ALGOL 3.13 ALGOL 2.98 ALGOL 2.83 ALGOL 2.67 ALGOL 2.67 ALGOL 2.58 ALGOL 2.58 ALGOL 2.28 ALGOL 2.25 ALGOL 2.13 ALGOL 2.13 ALGOL 2.14 SALGOL 2.15 ALGOL 3.15 ALGOL 3.16 ALGOL 3.17 ALGOL 3.18 ALGOL 3.19 APL 3.19 APL 3.5 APL 3.5 APL 3.5 APL 3.5 APL 3.44 APL	0.17 0.17 0.15 0.13 0.1 0.08 0.08 0.08 1 1.47 1.94 2.06 2.02 1.96 1.91 1.83
1987 Q4 C 1988 Q1 C 1988 Q2 C 1988 Q3 C 1988 Q3 C 1988 Q4 C 1989 Q1 C 1989 Q3 C 1989 Q4 C 1989 Q3 C 1989 Q4 C 1989 Q3 C 1989 Q4 C 1990 Q2 C 1990 Q4 C 1991 Q2 C 1991 Q4 C 1991 Q2 C 1991 Q4 C 1991 Q3 C 1991 Q4 C 1991 Q5 C	47.62 Ada 48.36 Ada 49.11 Ada 49.91 Ada 50.38 Ada 50.38 Ada 50.46 Ada 52.22 Ada 52.22 Ada 52.22 Ada 52.22 Ada 53.38 Ada 52.22 Ada 53.38 Ada 53.38 Ada 53.38 Ada 53.38 Ada 56.78 Ada 56.72 Ada 65.21 Ada 65.22 Ada 65.22 Ada 65.22 Ada 65.21 Ada 65.22 Ada 65.22 Ada 66.22 Ada 68.92 Ada 68.92 Ada 68.92 Ada 68.92 Ada 69.81 C++ 70.77 C++ 71.59 C++	44 88 Pascal 45 97 Pascal 47.06 Pascal 48.16 Pascal 47.3 Pascal 46.43 Pascal 45.55 Pascal 44.7 Pascal 42.41 Pascal 35.56 Pascal 35.56 Pascal 33.67 Pascal 32.73 Pascal 32.73 Pascal 32.73 Pascal 32.73 Pascal 29.2 Pascal 20.2 Pascal 20.4 Pascal 20.4 Ada	94.75 Lisp 33.92 Lisp 33.92 Lisp 33.92 Lisp 32.25 Lisp 92.25 Lisp 93.38 Lisp 92.44 Lisp 28.5 Lisp 27.85 Lisp 26.63 Lisp 27.25 Lisp 26.63 Lisp 27.25 Lisp 26.64 Lisp 29.44 Lisp 20.5 Lisp 21.7 Lisp 22.7 Lisp 23.7 C+++ 23.7 C+++ 24.7 Lisp 25.7 Lisp 26.63 Lisp 27.7 Lisp 28.7 Lisp 29.7 Lisp 29.7 Lisp 20.7 L	21.88 Fortrar 20.81 Fortrar 19.75 Fortrar 19.75 Fortrar 19.48 Fortrar 19.21 Fortrar 18.94 Fortrar 18.97 Fortrar 17.04 Fortrar 17.04 Fortrar 16.23 C++ 15.96 Lisp 16.73 Lisp 17.06 Fortrar 18.57 Fortrar 18.58 Fortrar 18.58 Fortrar 17.47 Fortrar 17.17 Fortrar 16.58 Fortrar 15.17 Fortrar 15.83 Fortrar 15.17 Fortrar 15.83 Fortrar 15.17 Fortrar	1 18.17 C++ 1 17.92 C++ 1 17.47 C++ 1 17.44 C++ 1 17.44 C++ 1 17.42 C++ 1 16.98 C++ 1 16.98 C++ 1 16.98 C++ 1 15.81 C++ 1 14.88 C++ 1 15.81 Fortran 13.71 Fo	11.9 BA 12.08 BL 12.08 BL 12.48 CL 12.47 CL 13.02 As 13.57 As 14.17 As 14.17 BL 13.15 BA 13.15 BA 13.15 BA 13.16 BB 13.28 BB 14.28 BB 14.38 BB 14.38 BB 14.38 BB 14.38 BB 15.38 BB 16.38 BB 17.38 BB 18.38 BB 19.17 BB	SIC 9.3 / SIC 8.45 / SIC 7.71 / SIC 7.71 / SIC 7.78 / SIC 7.78 / SIC 7.78 / SIC 7.78 / SIC 8.25 / SIC 8.27 / SIC 9.27 / S	1 COS COS	3OL 8.13 A 3OL 8.17 A 3OL 8.17 A 3OL 8.21 A 3OL 8.21 A 4 C 7.9 A 4 C 7.9 A 4 C 7.63 A 3OL 7.63 A 3OL 7.63 A 3OL 6.79 A 3OL 6.79 A 3OL 5.22 A 3OL 5.22 A 3OL 5.23 A 3OL 5.24 A 3OL 5.25 A 3O	APL	3.27 ALGOL 3.13 ALGOL 2.98 ALGOL 2.83 ALGOL 2.75 ALGOL 2.57 ALGOL 2.58 ALGOL 2.58 ALGOL 2.25 ALGOL 2.275 ALGOL 2.213 ALGOL 2.02 Visual Ba: 2.04 Visual Ba: 2.04 Visual Ba: 2.04 Visual Ba: 2.04 Visual Ba: 3.5 APL 3.5 APL 3.5 APL 3.38 APL 3.38 APL 3.38 APL 3.39 APL 3.39 APL 3.39 APL 3.39 APL 3.31 APL 3.31 APL 3.33 Perl 3.33 Perl 3.33 Perl 3.31 Perl	0.17 0.17 0.15 0.13 0.1 0.08 0.08 0.08 1 1.47 1.94 2.06 2.08 2.02 1.96 1.96 1.93 1.83 1.81 2.22
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1987 Q4 C 1988 Q1 C 1988 Q3 C 1989 Q1 C 1989 Q1 C 1989 Q1 C 1989 Q3 C 1989 Q4 C 1989 Q3 C 1989 Q3 C 1989 Q4 C 1990 Q2 C 1991 Q1 C 1991 Q2 C 1991 Q1 C 1991 Q2 C 1991 Q3 C 1991 Q4 C 1991 Q3 C 1991 Q4 C 1991 Q5 C 1995 Q5 C 1996 Q5 C	47.62 Ada 49.14 Ada 49.14 Ada 49.14 Ada 50.38 Ada 50.38 Ada 50.38 Ada 50.46 Ada 50.24 Ada 50.24 Ada 50.24 Ada 50.25 Ada 50.24 Ada 50.25 Ada 60.20	44.88 Pascal 45.97 Pascal 47.00 Pascal 37.00 Pascal 37.00 Pascal 37.00 Pascal 37.00 Pascal 37.00 Pascal 37.00 Pascal 27.00	34.75 Lisp 33.92 Lisp 33.92 Lisp 33.92 Lisp 33.92 Lisp 33.92 Lisp 32.25 Lisp 32.25 Lisp 32.35 Lisp 28.5 Lisp 27.85 Lisp 27.85 Lisp 27.85 Lisp 27.85 Lisp 28.5 Lisp 27.25 Lisp 28.5 Lisp 27.25 Lisp 28.5 Lisp 28.6 C++ 21.58 C++ 22.59 C++ 23.79 C++ 24.50 C++ 23.79 C++ 24.50 C++ 25.70 C++ 25	21.88 Formar 20.81 Formar 20.81 Formar 19.75 Formar 19.21 Formar 17.04 Formar 17.04 Formar 17.05 Formar 19.05	1 18.17 C++ 1 17.9C C++ 1 17.67 C++ 1 17.67 C++ 1 17.44 C++ 1 17.42 C++ 1 18.98 C++ 1 18.9	11.9 BA 12.08 BA 12.28 BA 12.28 BA 12.28 BA 12.26 CC 12.74 CC 12.74 CC 13.02 BA 13.09 BA 13.09 BA 14.17 BA 14.17 BA 14.17 BA 15.01 BA 15.01 BA 15.02 BA 15.02 BA 15.03 BA 15.03 BA 15.05 BA 17.05 BA 17.0	9.3 (SIC 9.3 (SIC 9.3 (SIC 9.3 (SIC 9.3 (SIC 9.4 (SIC	COSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSS	100	IPL	3.27 ALGOL 3.13 ALGOL 2.98 ALGOL 2.98 ALGOL 2.98 ALGOL 2.98 ALGOL 2.97 ALGOL 2.75 ALGOL 2.75 ALGOL 2.75 ALGOL 2.59 ALGOL 2.59 ALGOL 2.59 ALGOL 2.29 ALGOL 2.29 ALGOL 2.20 ALGOL	0.17 0.17 0.17 0.13 0.13 0.13 0.08 0.08 0.08 0.08 1.447 1.94 2.06 2.02 1.96 2.02 1.91 2.21 2.21 2.21 2.21 2.23 3.24 3.25 3.30 4.4.19 4.25
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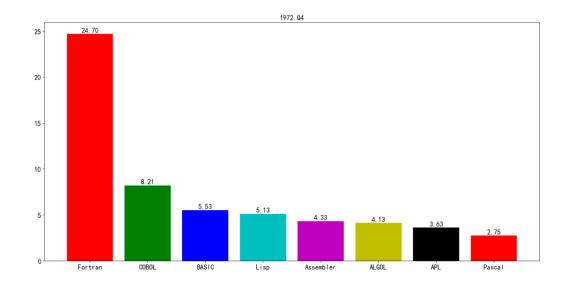
133 1998.Q1 C			and the second of the second	and the second second	and the second	and the same of				10.1	-1-	1	
	51.21 C++ 49.01 C++	16.56 Java	14.44 JavaScript	13.15 Perl	10.88 Visual Bat	10.4 BASIC 10.53 BASIC	6.72 Delphi	6.11 Pascal	5.58 Ass 5.5 PHI		8 Fortran	5.28	
134 1998.Q2 C 135 1998.O3 C	49.01 C++ 48.4 Java	16.27 Java 16.29 C++	15.4 JavaScript 15.81 JavaScript	13.86 Perl	11.28 Visual Bas 11.31 Visual Bas	10.53 BASIC 10.57 BASIC	6.51 Delphi 6.29 Delphi	6.24 Pascal 6.23 PHP	5.5 PHI 5.89 Pas		6 Assemble 5 Assemble		
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136 1998.Q4 C 137 1999.O1 C	47.79 Java 47.18 Java	18.07 JavaScript	15.35 JavaScript 15.83 C++	14.89 Perl	11.34 Visual Bas 11.37 Visual Bas	10.66 PHP	6.51 Delphi 7.14 Delphi	6.23 BASIC 6.23 BASIC	5.85 Pas		5 Assemble 5 Assemble	e 4.81 e 4.63	
137 1999.Q1 C 138 1999.Q2 C	47.18 Java 46.57 Java	18.96 JavaScript	16.48 C++	14.89 Perl	11.39 Visual Ba:	10.00 PHP	7.14 Delphi 7.77 Delphi	6.23 BASIC	5.63 Pas		5 Assemble		
139 1999.Q2 C	46.57 Java 44.2 Java	19.89 JavaScript	17.08 C++	14.2 Perl	11.39 Visual Ba:	10.66 PHP	8.66 Delphi	6.08 BASIC	5.03 Pas 5.27 Pas	cal 4	1 Assemble		
140 1999.Q3 C	44.2 Java 41.82 Java	20.82 JavaScript	17.08 C++	13.97 Perl	11.22 Visual Bar	10.60 PHP	9.56 Delphi	5.93 BASIC	4.92 Pas		1 Assemble		
141 2000.O1 C	39.45 lava	21.75 JavaScript	18 27 C++	13.74 Perl	10.87 Visual Bas		10.45 Delphi	5.78 BASIC	4.92 Pas 4.57 Pas		2 C#	3.72	
142 2000.Q1 C	37.08 Java	22.68 JavaScript	18.87 C++	13.5 PHP	11.35 Perl		10.52 Delphi	5.64 BASIC	4.22 Pas		.2 C#	3.12 A	
143 2000.Q2 C	34.94 Java	23.71 JavaScript	19.4 C++	13.25 PHP	12.34 Perl		10.48 Delphi	5.48 C#	4.25 Pas		2 BASIC	3.83	
144 2000.Q4 C	32.8 Java	24.74 JavaScript	19.94 PHP	13.34 C++	12.99 Visual Bas	10.45 Perl	10.3 Delphi	5.31 C#	4.5 Pas		2 BASIC	3.44	
145 2001.Q4 C	30.66 Java	25.78 JavaScript	20.48 PHP	14.33 C++	12.73 Visual Ba:	10.45 Perl	10.1 Delphi	5.15 C#	4.5 Pas 4.75 Pas		1 BASIC	3.44	
146 2001.Q1 C	28.53 Java	26.81 JavaScript	21.01 PHP	15.32 C++	12.47 Visual Bas	10.37 Perl	9.91 C#	5 Delphi	4.75 Pas 4.99 Pas		1 Python	2.05	
147 2001.Q2 C	27.71 C	27.02 JavaScript	21.35 PHP	16.16 C++	12.47 Visual Ba:	10.22 Perl	9.69 C#	5.22 Delphi	4.82 Pas		6 Python	2.98	
148 2001.Q4 Java	28.62 C	25.52 JavaScript	21.68 PHP	17 C++	12.04 Visual Ba:	10.08 Perl	9.47 C#	5.44 Delphi	4.66 Pas		6 Python	3.09	_
149 2002.Q1 Java	29.52 C	24.01 JavaScript	22.02 PHP	17.84 C++	11.82 Visual Bas	9.94 Perl	9.26 C#	5.65 Delphi	4.49 Pas		5 Python	3.2	
150 2002.Q1 Java	30.42 C	22.51 JavaScript	22.35 PHP	18.68 C++	11.62 Visual Bas	9.79 Perl	9.04 C#	5.87 Delphi	4.49 Pas 4.32 Ras				
151 2002 Q2 Java		22.51 Java3Clipt	21.3 PHP	19.36 C++	11.45 Visual Bat	9.79 Perl	8.79 C#	6.1 Delphi	4.52 Ras				
152 2002.Q3 Java	31.07 JavaScript 31.72 JavaScript	22.6 C	20.09 PHP	20.04 C++	11.45 Visual Bat	9.39 Perl	8.79 C#	6.34 Delphi	3.99 vth				
153 2003.Q1 Java	32.37 JavaScript	23.1 PHP	20.72 C	18.88 C++	11.15 Visual Ba:	9.19 Perl	8.3 C#	6.57 Delphi	3.83 Pyt		8 Pascal	3.31	
154 2003.Q1 Java	33.02 JavaScript	23.35 PHP	21.39 C	17.67 C++	11 Visual Ba:	8.99 Perl	8.05 C#	6.8 Python	3.81 Del	1011 3.0	6 Pascal	3.25	
155 2003.Q2 Java	33.45 JavaScript	23.43 PHP	21.77 C	16.86 C++	11.13 Visual Bas	8.73 Perl	7.81 C#	6.99 Python	3.94 Del		2 Pascal	3.19	
156 2003.Q3 Java 156 2003.O4 Java	33.45 JavaScript	23.51 PHP	22.14 C	16.05 C++	11.13 Visual Bat	8.47 Perl	7.58 C#	7.17 Python	4.07 Del	pni 3.5	8 Pascal	3.19	
		23.51 PHP 23.59 PHP		15.23 C++									
157 2004.Q1 Java	34.31 JavaScript		22.52 C		11.38 Visual Bas	8.21 C#	7.35 Perl	7.34 Python	4.2 Del		4 Pascal	3.06	
158 2004.Q2 Java	34.74 JavaScript	23.67 PHP	22.89 C	14.42 C++	11.5 Visual Bas	7.95 C#	7.54 Perl	7.1 Python	4.32 Del		1 Pascal	3	
159 2004.Q3 Java	34.75 JavaScript	23.59 PHP	22.96 C	14.02 C++	11.47 C#	7.72 Visual Bas	7.71 Perl	6.87 Python	4.51 Del	pni 3.0	2 Pascal	2.96	
160 2004.Q4 Java	34.75 JavaScript	23.52 PHP	23.03 C	13.62 C++	11.45 C#	7.91 Visual Bas	7.46 Perl	6.63 Python	4.7 Del		4 Pascal	2.92	
161 2005.Q1 Java	34.76 JavaScript	23.44 PHP	23.1 C	13.22 C++	11.43 C#	8.09 Visual Bas	7.22 Perl	6.4 Python	4.89 Pas		8 Delphi	2.85	
162 2005.Q2 Java	34.77 JavaScript	23.37 PHP	23.16 C	12.81 C++	11.4 C#	8.28 Visual Bat	6.97 Perl	6.17 Python	5.08 Pas		3 Delphi	2.77	
163 2005.Q3 Java	34.61 JavaScript	23.29 PHP	23.12 C	12.61 C++	11.5 C#	8.32 Visual Bat	6.84 Perl	5.98 Python	5.32 Pas		9 Matlab	2.77	
164 2005.Q4 Java	34.46 JavaScript	23.22 PHP	23.07 C	12.4 C++	11.6 C#	8.36 Visual Bat	6.71 Perl	5.79 Python	5.56 Rul		6 Matlab	2.83	
165 2006.Q1 Java	34.3 JavaScript	23.14 PHP	23.03 C	12.19 C++	11.7 C#	8.4 Visual Bas	6.58 Python	5.8 Perl	5.6 Rul		8 Matlab	2.89	
166 2006.Q2 Java	34.14 JavaScript	23.07 PHP	22.99 C	11.99 C++	11.8 C#	8.44 Visual Bat	6.44 Python	6.04 Perl	5.41 Rul		1 Matlab	2.95	
167 2006.Q3 Java	34.12 JavaScript	22.82 PHP	22.8 C	12.04 C++	11.85 C#	8.39 Visual Bat	6.36 Python	6.21 Perl	5.23 Rul		3 Matlab	3.02	
168 2006.Q4 Java	34.1 PHP	22.61 JavaScript	22.57 C	12.09 C++	11.9 C#	8.33 Python	6.37 Visual Bas	6.28 Perl	5.05 Rul	y 3.3	7 Matlab	3.09	
169 2007.Q1 Java	34.08 PHP	22.43 JavaScript	22.32 C	12.14 C++	11.95 C#	8.27 Python	6.53 Visual Bat	6.19 Perl	4.86 Rul		.5 Matlab	3.16	
170 2007.Q2 Java	34.06 PHP	22.24 JavaScript	22.07 C	12.19 C++	12 C#	8.22 Python	6.7 Visual Bat	6.11 Perl	4.68 Rul	y 3.6	i3 Matlab	3.24	
171 2007.Q3 Java	33.88 PHP	21.96 JavaScript	21.87 C	12.36 C++	12.08 C#	8.13 Python	6.9 Visual Bat	6.05 Perl	4.5 Rul		4 Matlab	3.29	
172 2007.Q4 Java	33.71 PHP	21.68 JavaScript	21.67 C	12.53 ++	12.16 C#	8.04 Python	7.11 Visual Bas	5.99 Perl	4.33 Rul		5 Matlab	3.34	
173 2008.Q1 Java	33.54 JavaScript	21.47 PHP	21.4 C	12.7 C++	12.24 C#	7.95 Python	7.32 Visual Bas	5.93 Perl	4.16 Rul	y 3.9	7 Matlab	3.4	
174 2008.Q2 Java	33.36 JavaScript	21.26 PHP	21.11 C	12.87 C++	12.33 C#	7.87 Python	7.52 Visual Bas	5.87 Ruby	4.08 Per	3.9	8 Matlab	3.45	
175 2008.Q3 Java	33.22 JavaScript	21.08 PHP	20.76 C	12.77 C++	12.41 C#	7.96 Python	7.72 Visual Bas	5.76 Ruby	4.07 Per	3.8	4 Matlab	3.48	
176 2008 O4 Java	33.07 JavaScript	20.89 PHP	20.4 C	12 68 C++	12 49 C#	8.06 Python	7 91 Visual Bar	5.64 Ruby	4 07 Per	. 3	7 Matlab	3.51	
176 2008.Q4 Java	33.07 JavaScript	20.89 PHP	20.4 C	12.68 C++	12.49 C#	8.06 Python	7.91 Visual	Ba: 5.64 Ru	hv /	.07 Perl	3.7	Matlab	3.51
177 2009.Q4 Java	32.92 JavaScript	20.69 PHP	20.4 C	12.58 C++	12.49 C#	8.16 Python	8.11 Visual			.07 Perl		Matlab	3.54
		20.52 PHP											
178 2009.Q2 Java	32.78 JavaScript	20.45 PHP	19.68 C++	12.65 C	12.49 Python	8.3 C# 8.54 C#	8.26 Visual			.06 Matlab	3.57 3.57		3.41
179 2009.Q3 Java	32.67 JavaScript	20.45 PHP	19.32 C++ 18.95 C++	12.52 C	12.17 Python	8.77 C#	8.5 Visual 8.74 Visual	Ba: 5.24 Ru	by 4	.07 Matlab			3.26
180 2009.Q4 Java	32.56 JavaScript			12.38 C	11.85 Python				Dy 4	.09 Objective	3.69	Matlab	3.57
181 2010.Q1 Java	32.45 JavaScript	20.32 PHP	18.59 C++	12.25 C	11.53 Python	9.01 C#	8.98 Visual			.19 Ruby		Matlab	3.57
182 2010.Q2 Java	32.34 JavaScript	20.25 PHP	18.22 C++	12.12 C	11.21 Python	9.24 C#	9.22 Visual	Ba: 4.74 Ob	nective 4	.69 Ruby		Matlab	3.57
										,		Matlab	
	32.12 JavaScript	20.33 PHP	17.87 C++	11.84 C	10.87 Python	9.54 C#	9.46 Objec	tive 5.18 Vis	ual Ba: 4	.55 Ruby			3.55
184 2010.Q4 Java	31.9 JavaScript	20.42 PHP	17.51 C++	11.56 C	10.54 Python	9.85 C#	9.7 Objec	tive 5.18 Vis	ual Ba: 4 ual Ba: 4	.55 Ruby .37 Ruby	4.14	Matlab	3.53
184 2010.Q4 Java 185 2011.Q1 Java	31.9 JavaScript 31.68 JavaScript	20.42 PHP 20.5 PHP	17.51 C++ 17.16 C++	11.56 C 11.29 C	10.54 Python 10.2 Python	9.85 C# 10.15 C#	9.7 Objec 9.95 Objec	tive 5.18 Vis tive 5.67 Vis tive 6.15 Vis	ual Ba: 4 ual Ba: 4 ual Ba: 4	.55 Ruby .37 Ruby .18 Ruby	4.14 4.16	Matlab	3.53 3.51
183 2010.Q3 Java 184 2010.Q4 Java 185 2011.Q1 Java 186 2011.Q2 Java	31.9 JavaScript	20.42 PHP 20.5 PHP	17.51 C++	11.56 C	10.54 Python	9.85 C#	9.7 Objec	tive 5.18 Vis tive 5.67 Vis tive 6.15 Vis	ual Ba: 4 ual Ba: 4 ual Ba: 4	.55 Ruby .37 Ruby	4.14 4.16		3.53
184 2010.Q4 Java 185 2011.Q1 Java 186 2011.Q2 Java	31.9 JavaScript 31.68 JavaScript	20.42 PHP 20.5 PHP	17.51 C++ 17.16 C++ 16.8 C++	11.56 C 11.29 C	10.54 Python 10.2 Python	9.85 C# 10.15 C#	9.7 Objec 9.95 Objec 9.87 Objec	tive 5.18 Vis tive 5.67 Vis tive 6.15 Vis tive 6.64 Ru	ual Ba: 4 ual Ba: 4 ual Ba: 4 by 4	.55 Ruby .37 Ruby .18 Ruby	4.14 4.16 3.99	Matlab	3.53 3.51
184 2010.Q4 Java 185 2011.Q1 Java 186 2011.Q2 Java 187 2011.Q3 Java	31.9 JavaScript 31.68 JavaScript 31.47 JavaScript	20.42 PHP 20.5 PHP 20.58 PHP	17.51 C++ 17.16 C++	11.56 C 11.29 C 11.01 Python	10.54 Python 10.2 Python 10.46 C#	9.85 C# 10.15 C# 10.19 C	9.7 Objec 9.95 Objec	tive 5.18 Vis tive 5.67 Vis tive 6.15 Vis tive 6.64 Ru tive 6.91 Ru	ual Ba: 4 ual Ba: 4 ual Ba: 4 by 4 by 4	.55 Ruby .37 Ruby .18 Ruby .17 Visual Ba	4.14 4.16 3.99 3.81	Matlab Matlab	3.53 3.51 3.49
184 2010.Q4 Java 185 2011.Q1 Java 186 2011.Q2 Java 187 2011.Q3 Java 188 2011.Q4 Java	31.9 JavaScript 31.68 JavaScript 31.47 JavaScript 31.29 JavaScript 31.11 JavaScript	20.42 PHP 20.5 PHP 20.58 PHP 20.61 PHP 20.65 PHP	17.51 C++ 17.16 C++ 16.8 C++ 16.48 Python 16.16 Python	11.56 C 11.29 C 11.01 Python 10.78 C++ 11.11 C#	10.54 Python 10.2 Python 10.46 C# 10.63 C# 10.68 C++	9.85 C# 10.15 C# 10.19 C 10.44 C 10.25 C	9.7 Objec 9.95 Objec 9.87 Objec 9.42 Objec 8.98 Objec	tive 5.18 Visitive 5.67 Visitive 6.15 Visitive 6.15 Visitive 6.64 Ruitive 6.91 Ruitive 7.19 Ru	tual Bat 4 tual Bat 4 tual Bat 4 by 4 by 4 by 4	.55 Ruby .37 Ruby .18 Ruby .17 Visual Ba .17 Visual Ba .17 Visual Ba	4.14 4.16 3.99 3.81 3.63	Matlab Matlab Matlab Matlab	3.53 3.51 3.49 3.48 3.47
184 2010.Q4 Java 185 2011.Q1 Java 186 2011.Q2 Java 187 2011.Q3 Java 188 2011.Q4 Java 189 2012.Q1 Java	31.9 JavaScript 31.68 JavaScript 31.47 JavaScript 31.29 JavaScript	20.42 PHP 20.5 PHP 20.58 PHP 20.61 PHP 20.65 PHP 20.69 PHP	17.51 C++ 17.16 C++ 16.8 C++ 16.48 Python 16.16 Python 15.84 Python	11.56 C 11.29 C 11.01 Python 10.78 C++ 11.11 C# 11.44 C#	10.54 Python 10.2 Python 10.46 C# 10.63 C#	9.85 C# 10.15 C# 10.19 C 10.44 C	9.7 Objec 9.95 Objec 9.87 Objec 9.42 Objec 8.98 Objec 8.53 Objec	titive 5.18 Visitive 5.67 Visitive 6.15 Visitive 6.64 Ruitive 6.91 Ruitive 7.19 Ruitive 7.46 Ru	tual Bat 4 tual Bat 4 tual Bat 4 by 4 by 4 by 4 by 4	.55 Ruby .37 Ruby .18 Ruby .17 Visual Ba .17 Visual Ba	4.14 4.16 3.99 3.81 3.63 3.46	Matlab Matlab Matlab Matlab Visual Bas	3.53 3.51 3.49 3.48
184 2010.Q4 Java 185 2011.Q1 Java 186 2011.Q2 Java 187 2011.Q3 Java 188 2011.Q4 Java 189 2012.Q1 Java 190 2012.Q2 Java	31.9 JavaScript 31.68 JavaScript 31.47 JavaScript 31.29 JavaScript 31.11 JavaScript 30.93 JavaScript 30.75 JavaScript	20.42 PHP 20.5 PHP 20.58 PHP 20.61 PHP 20.65 PHP	17.51 C++ 17.16 C++ 16.8 C++ 16.48 Python 16.16 Python 15.84 Python 15.53 Python	11.56 C 11.29 C 11.01 Python 10.78 C++ 11.11 C#	10.54 Python 10.2 Python 10.46 C# 10.63 C# 10.68 C++ 10.93 C++	9.85 C# 10.15 C# 10.19 C 10.44 C 10.25 C 9.87 C 9.49 C	9.7 Objec 9.95 Objec 9.87 Objec 9.42 Objec 8.98 Objec 8.53 Objec 8.08 Objec	titive 5.18 Visitive 5.67 Visitive 6.15 Visitive 6.64 Ru 6.64	tual Bat 4 tual Bat 5	.55 Ruby .37 Ruby .18 Ruby .17 Visual Ba .17 Visual Ba .17 Visual Ba .17 Matlab .16 Matlab	4.14 4.16 3.99 3.81 3.63 3.46 3.45	Matlab Matlab Matlab Matlab Visual Bas Visual Bas	3.53 3.51 3.49 3.48 3.47 3.45 3.27
184 2010.Q4 Java 185 2011.Q1 Java 186 2011.Q2 Java 187 2011.Q3 Java 188 2011.Q4 Java 189 2012.Q1 Java 190 2012.Q2 Java 191 2012.Q3 Java	31.9 JavaScript 31.68 JavaScript 31.47 JavaScript 31.29 JavaScript 31.11 JavaScript 30.93 JavaScript 30.75 JavaScript 30.55 JavaScript	20.42 PHP 20.5 PHP 20.58 PHP 20.61 PHP 20.65 PHP 20.69 PHP 20.73 PHP	17.51 C++ 17.16 C++ 16.8 C++ 16.48 Python 16.16 Python 15.84 Python 15.53 Python 15.21 Python	11.56 C 11.29 C 11.01 Python 10.78 C++ 11.11 C# 11.44 C# 11.76 C# 11.94 C#	10.54 Python 10.2 Python 10.46 C# 10.63 C# 10.68 C++ 10.93 C++ 11.18 C++ 11.16 C++	9.85 C# 10.15 C# 10.19 C 10.44 C 10.25 C 9.87 C 9.49 C 9.41 C	9.7 Objec 9.95 Objec 9.87 Objec 9.42 Objec 8.98 Objec 8.53 Objec 8.08 Objec 8.01 Objec	tive 5.18 Vis tive 5.67 Vis tive 6.15 Vis tive 6.64 Ru tive 6.91 Ru 7.19 Ru tive 7.46 Ru tive 7.73 Ru tive 7.8 Ru tive 7.8 Ru	tual Bat 4 tual Bat 5	.55 Ruby .37 Ruby .18 Ruby .17 Visual Ba .17 Visual Ba .17 Visual Ba .17 Matlab .16 Matlab .13 Matlab	4.14 4.16 3.99 3.81 3.63 3.46 3.45 3.45	Matlab Matlab Matlab Matlab Visual Ba: Visual Ba: Visual Ba:	3.53 3.51 3.49 3.48 3.47 3.45
184 2010.Q4 Java 185 2011.Q1 Java 186 2011.Q2 Java 187 2011.Q3 Java 188 2011.Q4 Java 189 2012.Q4 Java 190 2012.Q2 Java 191 2012.Q3 Java 192 2012.Q4 Java	31.9 JavaScript 31.68 JavaScript 31.47 JavaScript 31.29 JavaScript 31.11 JavaScript 30.93 JavaScript 30.75 JavaScript	20.42 PHP 20.5 PHP 20.58 PHP 20.61 PHP 20.65 PHP 20.69 PHP 20.73 PHP 20.84 PHP 20.96 PHP	17.51 C++ 17.16 C++ 16.8 C++ 16.48 Python 16.16 Python 15.53 Python 15.51 Python 14.9 Python	11.56 C 11.29 C 11.01 Python 10.78 C++ 11.11 C# 11.44 C# 11.76 C#	10.54 Python 10.2 Python 10.46 C# 10.63 C# 10.68 C++ 10.93 C++ 11.18 C++	9.85 C# 10.15 C# 10.19 C 10.44 C 10.25 C 9.87 C 9.49 C 9.41 C 9.33 C	9.7 Objec 9.87 Objec 9.87 Objec 9.42 Objec 8.98 Objec 8.53 Objec 8.08 Objec 8.01 Objec 7.93 Objec	titive 5.18 Vis titive 5.67 Vis titive 6.15 Vis titive 6.84 Ru titive 6.91 Ru titive 7.19 Ru titive 7.46 Ru 7.73 Ru titive 7.88 Ru titive 7.88 Ru	tual Bas 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	.55 Ruby .37 Ruby .18 Ruby .17 Visual Ba .17 Visual Ba .17 Visual Ba .17 Matlab .16 Matlab	4.14 4.16 3.99 3.81 3.63 3.46 3.45 3.45	Matlab Matlab Matlab Matlab Visual Bat Visual Bat Visual Bat Visual Bat	3.53 3.51 3.49 3.48 3.47 3.45 3.27 3.11
184 2010.Q4 Java 185 2011.Q1 Java 186 2011.Q2 Java 187 2011.Q3 Java 188 2011.Q4 Java 189 2012.Q1 Java 190 2012.Q2 Java 191 2012.Q3 Java 192 2012.Q4 Java 193 2013.Q1 Java 193 2013.Q1 Java	31.9 JavaScript 31.68 JavaScript 31.47 JavaScript 31.29 JavaScript 31.11 JavaScript 30.93 JavaScript 30.75 JavaScript 30.34 JavaScript 30.34 JavaScript 30.13 JavaScript	20.42 PHP 20.5 PHP 20.58 PHP 20.61 PHP 20.65 PHP 20.69 PHP 20.73 PHP 20.84 PHP 20.96 PHP 21.07 PHP	17.51 C++ 17.16 C++ 16.8 C++ 16.8 Python 16.16 Python 15.84 Python 15.53 Python 15.21 Python 14.9 Python	11.56 C 11.29 C 11.01 Python 10.78 C++ 11.11 C# 11.44 C# 11.76 C# 11.94 C# 12.11 C#	10.54 Python 10.2 Python 10.46 C# 10.63 C# 10.68 C++ 10.93 C++ 11.18 C++ 11.16 C++ 11.13 C++ 11.1 C++	9.85 C# 10.15 C# 10.19 C 10.44 C 10.25 C 9.87 C 9.49 C 9.41 C 9.33 C 9.24 Objectiv	9.7 Objec 9.95 Objec 9.87 Objec 9.42 Objec 8.98 Objec 8.03 Objec 8.01 Objec 7.93 Objec ve 7.95 C	titive 5.18 Vis titive 5.67 Vis titive 6.15 Vis titive 6.64 Ru titive 6.91 Ru titive 7.19 Ru titive 7.46 Ru titive 7.73 Ru titive 7.88 Ru 7.86 Ru 7.86 Ru	uual Bas 4 uual Bas 4 uual Bas 4 by	.55 Ruby .37 Ruby .18 Ruby .17 Visual Ba .17 Visual Ba .17 Visual Ba .17 Matlab .16 Matlab .18 Matlab .19 Matlab .09 Matlab	4.14 4.16 3.99 3.81 3.63 3.46 3.45 3.42 3.39 3.36	Matlab Matlab Matlab Matlab Visual Bat Visual Bat Visual Bat Visual Bat R	3.53 3.51 3.49 3.48 3.47 3.45 3.27 3.11 2.95 3.05
184 2010.Q4 Java 185 2011.Q1 Java 186 2011.Q2 Java 187 2011.Q3 Java 188 2011.Q4 Java 189 2012.Q1 Java 190 2012.Q2 Java 191 2012.Q3 Java 192 2012.Q4 Java 193 2013.Q1 Java 194 2013.Q1 Java 194 2013.Q2 Java	31.9 JavaScript 31.68 JavaScript 31.47 JavaScript 31.29 JavaScript 31.11 JavaScript 30.93 JavaScript 30.75 JavaScript 30.55 JavaScript 30.34 JavaScript 30.13 JavaScript 29.92 JavaScript	20.42 PHP 20.5 PHP 20.58 PHP 20.61 PHP 20.65 PHP 20.69 PHP 20.73 PHP 20.96 PHP 20.96 PHP 21.07 PHP 21.19 PHP	17.51 C++ 17.16 C++ 16.8 C++ 16.48 Python 16.16 Python 15.53 Python 15.21 Python 14.9 Python 14.58 Python 14.27 Python	11.56 C 11.29 C 11.01 Python 10.78 C++ 11.11 C# 11.44 C# 11.76 C# 11.94 CH 12.11 C# 12.29 C# 12.47 C#	10.54 Python 10.2 Python 10.46 C# 10.63 C# 10.68 C++ 11.18 C++ 11.18 C++ 11.13 C++ 11.10 C++ 11.10 C++	9.85 C# 10.15 C# 10.19 C 10.44 C 10.25 C 9.87 C 9.49 C 9.41 C 9.33 C 9.24 Objectiv 9.16 Objectiv	9.7 Objec 9.85 Objec 9.87 Objec 9.42 Objec 8.98 Objec 8.53 Objec 8.01 Objec 7.93 Objec ve 7.95 C	tive 5.18 Vis tive 5.67 Vis tive 6.15 Vis tive 6.64 Ru tive 6.91 Ru tive 7.19 Ru tive 7.46 Ru tive 7.8 Ru tive 7.88 Ru 7.86 Ru 7.87 Ru	ual Ba: 4 ual Ba: 4 by	.55 Ruby .37 Ruby .18 Ruby .17 Visual Ba .17 Visual Ba .17 Visual Ba .17 Matlab .16 Matlab .13 Matlab .09 Matlab .05 Matlab .02 Matlab	4.14 4.16 3.99 3.81 3.63 3.46 3.45 3.42 3.39 3.36 3.33	Matlab Matlab Matlab Matlab Visual Bat Visual Bat Visual Bat Visual Bat R	3.53 3.51 3.49 3.48 3.47 3.45 3.27 3.11 2.95 3.05 3.17
184 2010 Q4 Java 185 2011 Q1 Java 185 2011 Q2 Java 187 2011 Q3 Java 188 2011 Q4 Java 189 2012 Q1 Java 190 2012 Q2 Java 191 2012 Q3 Java 192 2012 Q4 Java 193 2013 Q1 Java 194 2013 Q2 Java 195 2013 Q3 Java 195 2013 Q3 Java	31.9 JavaScript 31.68 JavaScript 31.47 JavaScript 31.29 JavaScript 31.11 JavaScript 30.93 JavaScript 30.75 JavaScript 30.55 JavaScript 30.13 JavaScript 29.92 JavaScript 29.93 JavaScript 29.93 JavaScript	20.42 PHP 20.5 PHP 20.58 PHP 20.61 PHP 20.65 PHP 20.69 PHP 20.73 PHP 20.94 PHP 20.96 PHP 21.07 PHP 21.19 PHP	17.51 C++ 17.16 C++ 16.8 C++ 16.48 Python 16.16 Python 15.53 Python 15.53 Python 14.9 Python 14.9 Python 14.98 Python 14.98 Python 14.99 Python 13.9 Python	11.56 C 11.29 C 11.01 Python 10.78 C++ 11.11 C# 11.44 C# 11.76 C# 11.94 CH 12.21 C# 12.29 C# 12.47 C# 12.63 C#	10.54 Python 10.2 Python 10.46 C# 10.63 C# 10.68 C++ 10.93 C++ 11.18 C++ 11.13 C++ 11.1 C++ 11.10 C++ 11.08 C++ 10.93 C++	9.85 C# 10.15 C# 10.19 C 10.44 C 10.25 C 9.87 C 9.41 C 9.33 C 9.24 Objectiv 9.16 Objectiv 9.07 Objectiv	9.7 Objec 9.95 Objec 9.87 Objec 9.42 Objec 8.98 Objec 8.08 Objec 8.01 Objec 7.93 Objec 7.95 C ve 8.02 C	titive 5.18 Vis titive 5.67 Vis titive 6.15 Vis titive 6.64 Ru titive 6.91 Ru titive 7.19 Ru titive 7.46 Ru titive 7.73 Ru titive 7.88 Ru 7.86 Ru 7.78 Ru 7.77 Ru 7.72 Ru	ual Ba: 4 ual Ba: 4 by	.55 Ruby .37 Ruby .18 Ruby .17 Visual Ba .17 Visual Ba .17 Visual Ba .17 Matlab .16 Matlab .18 Matlab .09 Matlab .05 Matlab .05 Matlab .06 R	4.14 4.16 3.99 3.81 3.63 3.46 3.45 3.42 3.39 3.36 3.33 3.36 3.33	Matlab Matlab Matlab Matlab Visual Bat Visual Bat Visual Bat Visual Bat R R Matlab	3.53 3.51 3.49 3.48 3.47 3.45 3.27 3.11 2.95 3.05 3.17 3.29
184 2010 Q4 Java 185 2011 Q1 Java 185 2011 Q1 Java 187 2011 Q3 Java 187 2011 Q3 Java 188 2011 Q4 Java 189 2012 Q1 Java 199 2012 Q1 Java 199 2012 Q2 Java 191 2012 Q3 Java 192 2012 Q4 Java 192 2012 Q4 Java 193 2013 Q1 Java 194 2013 Q2 Java 195 2013 Q3 Java 195 2013 Q3 Java	31.9 JavaScript 31.68 JavaScript 31.47 JavaScript 31.29 JavaScript 31.11 JavaScript 30.93 JavaScript 30.75 JavaScript 30.55 JavaScript 30.34 JavaScript 30.13 JavaScript 29.92 JavaScript 29.83 JavaScript 29.83 JavaScript 29.84 JavaScript	20.42 PHP 20.5 PHP 20.58 PHP 20.61 PHP 20.65 PHP 20.65 PHP 20.73 PHP 20.96 PHP 20.96 PHP 21.19 PHP 21.19 PHP 21.29 PHP	17.51 C++ 17.16 C++ 16.8 C++ 16.48 Python 16.16 Python 15.53 Python 15.53 Python 14.9 Python 14.27 Python 13.9 Python 13.9 Python 13.59 Python	11.56 C 11.29 C 11.01 Python 10.78 C++ 11.11 C# 11.44 C# 11.76 CH 11.94 C# 12.11 C# 12.29 CH 12.47 C# 12.47 C# 12.8 C#	10.54 Python 10.2 Python 10.46 C# 10.63 C# 10.68 C++ 10.93 C++ 11.18 C++ 11.16 C++ 11.1 C++ 11.10 C++ 11.08 C++ 10.93 C++ 10.78 C++	9.85 C# 10.15 C# 10.19 C 10.44 C 10.25 C 9.87 C 9.49 C 9.41 C 9.33 C 9.24 Objectiv 9.07 Objectiv 8.99 Objectiv	9.7 Objec 9.85 Objec 9.87 Objec 9.42 Objec 8.98 Objec 8.08 Objec 8.01 Objec 7.93 Objec ve 7.95 C ve 8.02 C ve 7.86 C ve 7.7 C	tive 5.18 Vis 5.67 Vi	ual Bat 4 ual Bat 4 bby 5 bby 5 bby 5	.55 Ruby .37 Ruby .18 Ruby .18 Ruby .17 Visual Ba .17 Visual Ba .17 Watlab .16 Matlab .09 Matlab .05 Matlab .02 Matlab .02 Matlab .08 Matlab .09 Matlab .09 Matlab .09 Matlab .09 Matlab .09 Matlab .09 Matlab .09 Matlab	4.14 4.16 3.99 3.81 3.63 3.46 3.45 3.42 3.39 3.36 3.33 3.36 3.33 3.32	Matlab Matlab Matlab Matlab Matlab Visual Bat Visual Bat Visual Bat Visual Bat R R Matlab R	3.53 3.51 3.49 3.48 3.47 3.45 3.27 3.11 2.95 3.05 3.17 3.29 3.47
184 2010 Q4 Java 185 2011 Q1 Java 186 2011 Q2 Java 187 2011 Q3 Java 189 2012 Q1 Java 189 2012 Q1 Java 189 2012 Q1 Java 191 2012 Q2 Java 191 2012 Q3 Java 192 2012 Q4 Java 193 2013 Q1 Java 194 2013 Q2 Java 195 2013 Q3 Java 196 2013 Q4 Java 196 2013 Q4 Java	31.9 JavaScript 31.68 JavaScript 31.47 JavaScript 31.29 JavaScript 31.11 JavaScript 30.93 JavaScript 30.93 JavaScript 30.55 JavaScript 30.55 JavaScript 30.51 JavaScript 29.92 JavaScript 29.93 JavaScript 29.93 JavaScript 29.93 JavaScript 29.93 JavaScript 29.93 JavaScript 29.95 JavaScript 29.95 JavaScript 29.95 JavaScript	20.42 PHP 20.5 PHP 20.58 PHP 20.61 PHP 20.65 PHP 20.69 PHP 20.73 PHP 20.94 PHP 20.96 PHP 21.19 PHP 21.29 PHP 21.39 PHP 21.5 PHP	17.51 C++ 17.16 C++ 16.8 C++ 16.48 Python 16.16 Python 15.53 Python 15.53 Python 14.9 Python 14.9 Python 14.98 Python 14.97 Python 13.99 Python 13.99 Python 13.16 Python 13.16 Python	11.56 C 11.29 C 11.01 Python 10.78 C++ 11.11 C# 11.44 C# 11.94 C# 12.11 CH 12.29 C# 12.63 C# 12.8 C# 12.96 C#	10.54 Python 10.2 Python 10.46 C# 10.63 C# 10.68 C++ 10.93 C++ 11.16 C++ 11.13 C++ 11.10 C++ 11.08 C++ 10.93 C++ 10.93 C++ 10.93 C++ 10.93 C++	9.85 C# 10.15 C# 10.19 C 10.44 C 10.25 C 9.87 C 9.49 C 9.33 C 9.24 Objectiv 9.16 Objectiv 8.99 C	9.7 Objec 9.87 Objec 9.87 Objec 9.42 Objec 8.98 Objec 8.08 Objec 8.01 Objec 7.93 Objec ve 8.02 C ve 7.86 C ve 7.7 C 7.58 Objec	tive 5.18 Vis tive 5.67 Vis 5.67 Vis 5.67 Vis 6.64 Ru tive 6.64 Ru tive 6.91 Ru tive 7.46 Ru tive 7.46 Ru tive 7.88 Ru 7.88 Ru 7.78 Ru 7.72 Ru 7.55 Ru 7.55 Ru titve 7.54 Sw 7.55 Ru Tive 7.54 Sw 7.55 Ru titve 7.54 Sw 7.55 Ru Tive 7.54 Sw 7.55 Ru titve 7.54 Sw 7.55 Ru Tive 7.55 Ru		.55 Ruby .37 Ruby .18 Ruby .17 Visual Ba .17 Visual Ba .17 Visual Ba .17 Matlab .16 Matlab .18 Matlab .09 Matlab .05 Matlab .02 Matlab .02 Matlab .03 Swift .04 Swift .05 Ruby	4.14 4.16 3.99 3.81 3.63 3.45 3.45 3.39 3.36 3.33 3.32 3.35 3.32 3.35 3.32	Matlab Matlab Matlab Matlab Matlab Visual Bat Visual Bat Visual Bat R R Matlab R R R R R	3.53 3.51 3.49 3.48 3.47 3.45 3.27 3.11 2.95 3.05 3.17 3.29 3.47 3.63
184 2010 Q4 Java 185 2011 Q1 Java 185 2011 Q1 Java 187 2011 Q3 Java 187 2011 Q3 Java 189 2012 Q1 Java 189 2012 Q1 Java 199 2012 Q1 Java 191 2012 Q3 Java 192 2012 Q4 Java 193 2013 Q1 Java 194 2013 Q2 Java 195 2013 Q3 Java 196 2013 Q4 Java 197 2014 Q1 Java 197 2014 Q1 Java	31.9 JavaScript 31.68 JavaScript 31.47 JavaScript 31.29 JavaScript 31.21 JavaScript 30.93 JavaScript 30.95 JavaScript 30.95 JavaScript 30.92 JavaScript 29.92 JavaScript 29.93 JavaScript 29.93 JavaScript 29.93 JavaScript 29.93 JavaScript 29.93 JavaScript 29.95 JavaScript 29.95 JavaScript 29.95 JavaScript 29.76 JavaScript 29.76 JavaScript	20.42 PHP 20.5 PHP 20.58 PHP 20.61 PHP 20.65 PHP 20.69 PHP 20.73 PHP 20.73 PHP 20.96 PHP 21.07 PHP 21.10 PHP 21.13 PHP 21.29 PHP 21.29 PHP 21.29 PHP 21.29 PHP 21.29 PHP 21.39 PHP 21.5 PHP	17.51 C++ 17.16 C++ 16.18 C++ 16.18 C++ 16.18 C++ 16.18 C++ 16.18 C++ 16.16 Python 15.18 Python 15.21 Python 14.27 Python 14.27 Python 13.29 Python 13.35 Python 13.31 Python 13.31 Python 13.31 Python 13.31 Python	11.56 C 11.29 C 11.01 Python 10.78 C++ 11.11 C# 11.44 C# 11.76 C# 11.21 C# 12.21 C# 12.27 C# 12.87 C# 12.87 C# 12.87 C# 12.87 C# 12.88 C# 12.96 C#	10.54 Python 10.2 Python 10.46 C# 10.63 C# 10.68 C++ 10.93 C++ 11.18 C++ 11.13 C++ 11.10 C++ 11.10 C++ 11.08 C++ 10.93 C++ 10.93 C++ 10.93 C++ 10.93 C++ 10.94 C++	9.85 C# 10.15 C# 10.19 C 10.44 C 10.25 C 9.87 C 9.41 C 9.33 C 9.24 Objectiv 9.16 Objectiv 8.99 Objectiv 8.99 Objectiv 8.99 C 8.81 C	9.7 Objec 9.95 Objec 9.87 Objec 9.42 Objec 8.53 Objec 8.08 Objec 8.01 Objec 7.93 Objec 8.02 C ve 7.95 C ve 7.86 C ve 7.75 Objec 7.51 Objec	titve 5.18 Visitive 5.67 Visitive 6.64 Ru titve 6.64 Ru titve 6.64 Ru titve 6.91 Ru titve 7.19 Ru titve 7.45 Ru 7.48 Ru 7.88 Ru 7.88 Ru 7.78 Ru 7.75 Ru 7.65 Ru 7.65 Ru 7.65 Ru titve 7.38 Sw titve 7.38 Sw		.55 Ruby .37 Ruby .18 Ruby .17 Visual Ba .17 Visual Ba .17 Visual Ba .17 Matlab .16 Matlab .13 Matlab .09 Matlab .05 Matlab .02 Matlab .08 R .39 Swift .89 Ruby .21 R	4.14 4.16 3.99 3.81 3.63 3.45 3.45 3.39 3.36 3.33 3.32 3.32 3.32 3.33	Matlab Matlab Matlab Matlab Matlab Visual Bat Visual Bat Visual Bat R R Matlab R R R R R R R R	3.53 3.51 3.49 3.48 3.47 3.45 3.27 3.11 2.95 3.05 3.17 3.29 3.47 3.63 3.77
184 2010 Q4 Java 185 2011 Q1 Java 186 2011 Q2 Java 187 2011 Q3 Java 187 2011 Q3 Java 189 2012 Q1 Java 189 2012 Q1 Java 191 2012 Q3 Java 191 2012 Q3 Java 193 2013 Q1 Java 193 2013 Q1 Java 195 2012 Q4 Java 195 2013 Q3 Java 195 2013 Q3 Java 195 2014 Q4 Java 197 2014 Q1 Java 198 2014 Q2 Java	31.9 JavaScript 31.68 JavaScript 31.67 JavaScript 31.29 JavaScript 31.29 JavaScript 30.93 JavaScript 30.93 JavaScript 30.93 JavaScript 30.94 JavaScript 29.92 JavaScript 29.92 JavaScript 29.93 JavaScript 29.93 JavaScript 29.94 JavaScript 29.95 JavaScript 29.96 JavaScript 29.97 JavaScript 29.97 JavaScript 29.98 JavaScript 29.98 JavaScript 29.98 JavaScript 28.84 JavaScript 28.84 JavaScript 28.84 JavaScript	20.42 PHP 20.5 PHP 20.58 PHP 20.61 PHP 20.65 PHP 20.69 PHP 20.73 PHP 20.98 PHP 20.98 PHP 21.07 PHP 21.19 PHP 21.29 PHP 21.39 PHP 21.5 PHP 21.5 PHP 21.6 Python 21.7 Python	17.51 C++ 17.16 C++ 16.8 C++ 16.48 Python 15.84 Python 15.83 Python 15.83 Python 14.9 Python 14.9 Python 14.9 Python 13.53 Python 13.16 Python 13.16 Python 13.17 Python 13.18 Python 13.18 Python 13.18 Python 13.18 Python	11.56 C 11.29 C 11.01 Python 10.78 C++ 11.11 C# 11.44 C# 11.76 C# 11.94 C# 12.29 C# 12.27 C# 12.63 C# 12.86 C# 12.96 C# 12.79 C# 12.41 C#	10.54 Python 10.2 Python 10.63 C# 10.63 C# 10.63 C++ 11.18 C++ 11.18 C++ 11.13 C++ 11.10 C++ 10.93 C++ 10.93 C++ 10.93 C++ 10.94 C++ 10.94 C++ 10.94 C++ 10.95 C+	9.85 C# 10.15 C# 10.19 C 10.44 C 10.25 C 9.87 C 9.49 C 9.33 C 9.24 Objecto 9.07 Objecto 8.99 C 8.99 C 8.81 C	9.7 Objec 9.95 Objec 9.87 Objec 9.87 Objec 8.88 Objec 8.80 Objec 8.01 Objec 7.93 Objec ve 7.95 C ve 7.86 C ve 7.75 C 7.80 Objec 7.51 Objec 7.33 Objec	titive 5.18 Visitive 5.67 Visitive 6.64 Rutitive 6.91 Ru titive 7.19 Ru titive 7.48 Ru titive 7.48 Ru titive 7.8 Ru 7.78 Ru 7.78 Ru 7.78 Ru 7.65 Ru 7.65 Ru 7.65 Ru titive 7.38 Su 7.73 Ru 7.7		.55 Ruby .37 Ruby .18 Ruby .17 Visual Ba .17 Visual Ba .17 Visual Ba .17 Matlab .16 Matlab .13 Matlab .05 Matlab .05 Matlab .05 Matlab .02 Matlab .05 Ruby .21 R .39 Ruby .43 R	4.14 4.16 3.99 3.81 3.43 3.45 3.42 3.39 3.36 3.33 3.32 3.57 3.83 3.78	Matlab Matlab Matlab Matlab Matlab Visual Bat Visual Bat Visual Bat R R Matlab R R R R R R R R R R R R R R R R R R R	3.53 3.51 3.49 3.48 3.47 3.45 3.27 3.11 2.95 3.05 3.17 3.29 3.47 3.63 3.77
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184 2010 c4 Java 185 2011 c1 Java 186 2011 c2 Java 187 2011 c2 Java 188 2011 c1 Java 188 2012 c1 Java 188 2012 c1 Java 189 2012 c2 Java 199 2012 c2 Java 199 2012 c2 Java 199 2012 c2 Java 199 2013 c2 Java 199 2013 c2 Java 199 2013 c2 Java 199 2014 c3 Java	31.9 JavaScript 31.63 JavaScript 31.67 JavaScript 31.67 JavaScript 31.72 JavaScript 31.11 JavaScript 31.11 JavaScript 30.75 JavaScript 30.75 JavaScript 30.75 JavaScript 30.75 JavaScript 30.24 JavaScript 30.25 JavaScript 29.25 JavaScript 29.26 JavaScript 29.27 JavaScript 28.27 JavaScript 27.27 JavaScript 27.27 JavaScript 27.27 JavaScript 27.28 JavaScript 27.29 JavaScript 28.29 JavaScript 28.29 JavaScript 29.20 J	20.42 PHP 20.5 PHP 20.58 PHP 20.61 PHP 20.61 PHP 20.68 PHP 20.69 PHP 20.73 PHP 20.44 PHP 21.07 PHP 21.19 PHP 21.29 PHP 21.29 PHP 21.39 PHP 21.5 PHP 21.8 Python 21.8 Python 21.8 Python 21.9 Python 22.15 Python 22.1	17.51 C++ 16.8 C++ 16.8 C++ 16.48 Python 16.16 Python 15.51 Python 15.52 Python 14.59 Python 14.59 Python 14.57 Python 13.59 Python 13.59 Python 13.59 Python 13.56 Pyth 13.56 PHP 13.78 PHP 14.78 PHP 14.79 PHP 15.01 PHP	11 56 C 11 29 C 11 01 Python 10 78 C++ 11 11 CF 11 14 CF 11 76 CF 11 94 CF 12 11 CF 12 29 CF 12 47 CF 12 8 CF 12 8 CF 12 9 CF 12 10	10.54 Python 10.46 C# 10.63 C# 10.68 C++ 11.18 C++ 11.18 C++ 11.11 C++ 11.10 C++ 10.93 C++ 10.93 C++ 10.93 C++ 10.94 C++ 10.95	9.85 C# 10.15 C# 10.15 C# 10.15 C# 10.15 C# 10.19 C 10.44 C 10.25 C 9.87 C 9.49 C 9.41 C 9.33 C 9.41 C 9.33 C 9.46 Objecto 8.99 Objecto 8.99 Objecto 8.81 C 8.54 C 8.54 C 8.26 C 8.54 C 8.26 C 7.97 C 7.82 C	9.7 Objec 9.95 Objec 9.87 Objec 9.87 Objec 9.87 Objec 8.93 Objec 8.93 Objec 8.93 Objec 8.91 Objec 8.91 Objec 7.93 Objec ve 7.88 C ve 7.88 C ve 7.88 Objec 7.51 Objec 7.53 Objec 7.54 Objec 7.14 Objec 7.10 Objec 6.68 Objec 6.68 Objec 6.66 Objec	titue 5.18 Visitative 6.15 Visitative 6.15 Visitative 6.15 Visitative 6.15 Visitative 6.15 Visitative 7.10 Visitative 6.10 Vis	ual Bai 4 by by 4 by 4 bby 4 bby 4 bby 4 bby 4 bby 4 bby 4 thirt ift ift ift 4 ift 4	.55 Ruby .37 Ruby .18 Ruby .17 Visual Ba .17 Matlab .13 Matlab .05 Matlab	4.14 4.16 4.19 3.81 3.63 3.43 3.45 3.45 3.45 3.33 3.33 3.35 3.57 3.83 3.78 4.01 4.12 4.23 4.33 4.34 4.34 4.42	Matlab Matlab Matlab Matlab Matlab Matlab Matlab Visual Bat Visual Bat Visual Bat R R R R R R R R R R R R R R R R R R R	3.53 3.51 3.49 3.48 3.47 3.47 3.11 2.95 3.05 3.17 3.29 3.47 3.67 3.62 3.55 3.48 3.39 3.39 3.39 3.39
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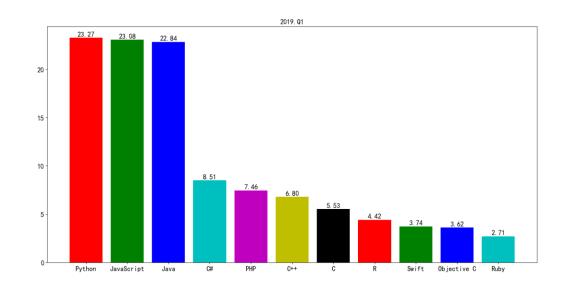
总共 1965.Q1 到 2019.Q3 总共 219 个季度。

红色的部分就是被猫头鹰遮挡的季度,只能手动修改。 其他的数据则不需要修改。

动态展示如下:

这里就随便截取几张图片:





变化分析:

这里主要分析几个曾经或者现在特别流行的语言。视频中的数据是从 1965年开始统计的,刚开始我们可以看到排在第一位的是 Fortran,它是为科学、工程问题或企事业管理中的那些能够用数学公式表达的问题而设计的,其数值计算的功能较强。Fortran 在当时之所以这样流行是因为 Fortran 语言是世界上第一个被正式推广使用的高级语言。它是 1954年被提出来的,1956年开始正式使用,它始终是数值计算领域所使用的主要语言。Fortran 语言问世以来,根据需要几

经发展,先后推出了不同的版本,其中最流行的是 1958 年出现的 Fortran II 和 1962 年出现的 Fortran IV。Fortran IV(即 Fortran 66)流行了十几年,几乎统治了所有的数值计算领域,许多应用程序和程序库都是用 Fortran IV语言编写的。Fortran 的优势是简单好写,计算效率也很高,非常适合短小的计算程序。但对于很多大规模科学计算来说,核心部分往往是高强度的矩阵运算,不管用什么语言都需要高度优化、甚至拿 C 或者汇编根据体系结构特点来写。

在 1977 年左右,Pascal 语言增长迅速反超 COBOL 然后继续增长在 1980 年左右超过 Fortran。Pascal 语言是由瑞士 Niklaus Wirth 教授于六十年代末设计并创立的。Pascal 语言语法严谨,层次分明,程序易写,可读性强,是第一个结构化编程语言。严格的结构化形式;丰富完备的数据类型;运行效率高;查错能力强。 Pascal 语言还是一种自编译的语言,这就使它的可靠性大大提高了。Pascal 语言重大影响来自于程序设计教学,它的出现取代了 Fortran 作为程序设计入门语言的地位。

后来到了 1982 年 C语言的出现到 1986 年 Ada 和 C语言不分上下,都占百分之四十多。Ada 是一种程序设计语言。源于美国军方的一个计划,旨在整合美军事系统中运行着上百种不同的程序设计语言。Ada 不仅体现了许多现代软件的开发原理,而且将这些原理付诸实现。同时,Ada 语言的使用可大大改善软件系统的清晰性、可靠性、有效性、可维护性。Ada 是现有的语言中无与伦比的一种大型通用程序设计语言,它是现代计算机语言的成功代表,集中反映了程序语言研究的成果。Ada 的出现,标志着软件工程成功地进入了国家和国际的规模。Ada 在那个年代曾是美国国防部指定唯一可用于军用系统开发的语言。这也是当时它比较流行的原因之一。

1988 年以后到 1997 年 C 语言一直稳居第一,占到百分之 70 多。c 语言的主体设计完成后,Thompson 和 Ritchie 用它完全重写了 UNIX,在开发中,他们还考虑把 UNIX 移植到其他类型的计算机上使用。C 语言强大的移植性(Portability),C 语言程序则可以使用在任意架构的处理器上,只要那种架构的

处理器具有对应的 C 语言编译器和库,然后将 C 源代码编译、连接成目标二进制文件之后即可运行。且随着 UNIX 的发展,C 语言也得到了不断的完善。为了利于 C 语言的全面推广,许多专家学者和硬件厂商联合组成了 C 语言标准委员会,并在之后的 1989 年,诞生了第一个完备的 C 标准。直到今天,各种版本的UNIX 内核和周边工具仍然使用 C 语言作为最主要的开发语言。C 语言优点:(1)简洁的语言(2)具有结构化的控制语句(3)丰富的数据类型(4)丰富的运算符(5)可对物理地址进行直接操作(6)代码具有较好的可移植性(7)可生成高质量、目标代码执行效率高的程序,另外和其他高级语言相比,C 语言可以生成高质量和高效率的目标代码,故通常应用于对代码质量和执行效率要求较高的嵌入式系统程序的编写。所以 C 语言当非常流行的另一个原因是在 20 世纪 80年代,随着微电子工艺水平的提高,嵌入式系统的发展也非常迅速。20 世纪 90年代,在分布控制、柔性制造、数字化通信和信息家电等巨大需求的牵引下,嵌入式系统进一步快速发展。

直到 1997 年 Java 出现,到 2001 年左右 java 已经排到第一 JavaScript 也紧跟在后面,

Java 是一门面向对象编程语言,不仅吸收了 C++语言的各种优点,还摒弃了 C++ 里难以理解的多继承、指针等概念,因此 Java 语言具有功能强大和简单易用两 个特征。Java 语言作为静态面向对象编程语言的代表,极好地实现了面向对象理 论,允许程序员以优雅的思维方式进行复杂的编程。同时又因为此时的 Android 系统在手机上广泛使用脑,许多的 Android 应用都是 Java 程序员开发者开发。 虽然 Android 运用了不同的 JVM 以及不同的封装方式,但是代码还是用 Java 语 言所编写。相当一部分的手机中都支持 JAVA 游戏,这就使 JAVA 更进一步的流 行。JavaScript 是一种属于网络的脚本语言,已经被广泛用于 Web 应用开发,常用 来为网页添加各式各样的动态功能,为用户提供更流畅美观的浏览效果。通常 JavaScript 脚本是通过嵌入在 HTML 中来实现自身的功能的。JavaScript 的流行很大一部分是跟 21 世纪互联网的快速发展有关。

大概 2012 年左右, Python 开始迅速增长。由于 Python 语言的简洁性、易读 性以及可扩展性,在国外用 Python 做科学计算的研究机构日益增多,一些知名 大学已经采用 Python 来教授程序设计课程。众多开源的科学计算软件包都提供 了 Python 的调用接口,例如著名的计算机视觉库 OpenCV、三维可视化库 VTK、 医学图像处理库 ITK。而 Python 专用的科学计算扩展库就更多了,例如如下 3 个 十分经典的科学计算扩展库: NumPy、SciPy 和 matplotlib,它们分别为 Python 提供了快速数组处理、数值运算以及绘图功能。因此 Python 语言及其众多的扩 展库所构成的开发环境十分适合工程技术、科研人员处理实验数据、制作图表, 甚至开发科学计算应用程序。而最几年 Python 突然流行的原因主要有以下几个 关键节点。12~14 年是云计算最火的几年,大批创业公司和巨头进军云计算领 域,大家都在做 IAAS,最著名的云计算开源平台 OpenStack 就是基于 Python 开发的,为此催生出不少 Pvthon 岗位。14~15 年 O2O、P2P 产品如雨后春笋般 冒出, Python 适合快速搭建原型。16~17年人工智能成为热门话题而人工智能、 机器学习的首选语言就是 Python。同时大数据的发展也使得 Python 更加被普遍 使用。数据挖掘、分析、机器学习、人工智能都需要大数据的支撑,而真正有大 数据的厂商没几个,所以小厂不得不通过爬虫去获取数据。而爬虫也需要用到 Python_o

从以上分析可以预测,每一种曾经排在过第一的语言大多会持续一段较长的时间,这都与当时世界计算机水平的发展息息相关,也与当时热门的研究话题有关。而且排在第一的语言大都会领先排名第二很多。所以从目前 Python、Java、JavaScript 排在前三各占百分之二十多来看,Python 应该会继续增长至第一,且会与第二名拉开较大差距。并以此持续一段时间直到计算机有新的研究热门话题出现或者一种新的语言诞生。